Arboretum BULLETIN

A JOURNAL OF GENERAL HORTICULTURAL INFORMATION

PUBLISHED QUARTERLY BY THE UNIVERSITY OF WASHINGTON

ARBORETUM FOUNDATION • SEATTLE WASHINGTON

Fall, 1956

VOLUME XIX, NUMBER 3

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The Arboretum Bulletin

VOLUME XIX FALL, 1956 NUMBER 3

The Bailey Hortorium, Its Past and Present

George H. M. Lawrence*

THE name of the Bailey Hortorium is known to thousands of persons. Its offices, collections, and library are known to hundreds. Its staff members and their scientific work are as well known by scientists abroad as by those in this country. Yet, the average American horticulturist knows surprisingly little about the Liberty Hyde Bailey Hortorium, its organization, its research program, its services or its service potential. Why are these not generally known? Probably it is because its staff is of scientists, and like so many of this fraternity—the botanical perhaps more than all others—its members have been reluctant to publicize themselves lest the limits of good taste and propriety be breached, an inhibition not so notable among the physical scientists or even those in the field of medicine. Considered from the horticulturist's standpoint, this modesty may be unbecoming.

The Hortorium is the outgrowth of a lifetime of work by Liberty Hyde Bailey. While its date of founding is cited as 1935, at which time he gave it formally to Cornell University, it became an institution in the early 1920's, following his return from an extended collecting trip in central China. The earliest collections made by Dr. Bailey and now in the herbarium date from 1881, collections he made of Michigan's native plants, preserved and added to over the intervening decades.

At the time of its transfer to Cornell, Dr. Bailey's gift consisted of a collection of 125,000 herbarium specimens, largely of his own making, and then probably the largest private herbarium anywhere; a library of about 2,700 volumes, exceedingly rich in early horticultural and agricultural works and including basic taxonomic references and floras of the world; a brick building (converted and modernized from a stable, carriage house and coachman's quarters) attached to his residence, and an adjoining garden space. No endowment of funds was involved. This was its beginning.

When the terms of the gift were readied for acceptance, Cornell's President Farrand told Dr. Bailey, "We will name this the Liberty Hyde Bailey Herbarium."

"If you do," retorted Bailey, with characteristic bluntness, "I shall not give it to you."

"What would you have us call it then?" President Farrand countered, somewhat nonplussed.

"Call it an Hortorium," said Bailey.

"An Hortorium?" queried the President. "Where did you get that word?"

"I just coined it," said Dr. Bailey. "It comes from 'Hortus,' the Latin for 'garden.' It is a repository for things of the garden. It

*Reprinted from "Baileya," Vol. 4, No. 1, March 1956, with the kind permission of the editor and the author.

is to be a place for the scientific study of the plants of the garden—their documentation, their classification, and their naming. That is what my wife and I are giving you. Not just an herbarium!"

By a garden he meant any place where man grows plants. It may be a wheat field, a conservatory, an orchard, a bed of flowers, or a pot of pansies. It was thus that the name and concept of an Hortorium came into being. At present there is only one, and it bears the name of Liberty Hyde Bailey.

The Hortorium was accepted by Cornell University very largely because of the confidence placed in Dr. Bailey by the Provost of the institution, who had been its former Dean of the College of Agriculture, a student of Dr. Bailey's, and the Secretary of the College Faculty when Bailey was its Dean. This was Albert R. Mann, for whom was named the library building in which the Hortorium's principal offices are now situated. Provost Mann, an astute scholar and keen administrator, recognized a future for the institution now named the Hortorium. Without his support, it probably would never have survived as a separate institution. As early as 1930, while it was yet a private enterprise, he allocated funds for the publication of its periodical, "Gentes Herbarum" (occasional technical papers about the kinds of cultivated plants), which had been founded and named by Bailey in 1920 and financed by him as a private journal, distributed without charge to botanical centers throughout the world.

Although it belongs to the University, the Hortorium has been and still is supported solely by funds made available to it by the Administration of the New York State College of Agriculture at Cornell. For the most part, its total annual budget of about $50,000 comes from college income received from fees and tuitions paid by out-of-state students. Its growth as an institution has been due very largely to the recognition by the College Administration of its place as a truly unique botanical center for research and service in the field of agriculture and, more especially, of horticulture.

The physical facilities of the Hortorium, while allowing little room for expansion, are excellent. It eventually outgrew the original building adjoining Dr. Bailey's residence. When it moved from there in 1952 to the fourth floor of the new A. R. Mann Library, it lost some of its atmosphere of informality, of family tie, and, of course, the association with the physical surroundings in which it originated. No longer could one hear the ring of the cow-bell of Dr. Bailey's boyhood when a major manuscript or book was finished, no longer could one hear a devoted daughter affectionately call to her father, "Tommy, the telephone." No longer could one work for days on end without interruption. And no longer could one enjoy a lapful of cat, or would one have to be alert to keep papers free of pussy's footprints. With that move from the unpretentious but homey and comfortable quarters to modern offices and laboratories with all their ample equipment, a new Hortorium displaced the old. It was a mark of progress, but the nostalgia has not entirely disappeared.

The staff of the Hortorium is composed of botanists trained as plant taxonomists. That is, each is a specialist in plant classification, identification, and nomenclature. The literature and the methods of approach used in resolving these problems are botanical, the subjects with which we work are horticultural. The basic difference between the identifying of a cultivated and a wild plant is that one generally knows from what region the wild plant comes, and, knowing this, one can consult a botanical work on the plants of that particular geographical area. One does not often know the origin of plants of the garden. Therefore, each staff member must become thoroughly conversant with the floras and literature, not only of the United States, or of North America, but of the world, and he must recognize a large number of families and genera on sight.

It happens that it was this very situation that guided me to Cornell. At one time I was growing as many kinds of rock garden plants

as I could. Once, when I could not identify some thrifts (Armeria), I brought specimens to the late Professor Fernald at Harvard, for him to name. After I naively admitted to him that they came from the garden, he replied tartly, "Cultivated rubbish. Send them to Bailey." Thus, my interests brought me to Cornell, made better known to horticulturists by L. H. Bailey.

Dr. Moore of this staff is a graduate of the University of Massachusetts and took his doctorate degree under Professor Fernald at Harvard. Dr. Dress majored in classical languages and English at the University of Buffalo, and took his doctorate in botany here at Cornell. Mr. DeWolf is also a graduate of the University of Massachusetts, with advanced degrees in botany from Tulane University and the University of Singapore. Miss Ethel Bailey, co-editor of "Hortus Second," editor of "Hortus III," and Curator of our collections, is a Smith graduate. This staff of five is small in number, but the research and service potential of the Hortorium as an institution is great.

Since the early years of the Hortorium as a unit of the University Dr. Bailey championed the superiority of scientific illustrations from the pen of a trained botanical artist over photographs of the same plant material. There has been a full-time illustrator on our staff since 1937; the present, and third to hold the position, is Miss Mitsu Nakayama, whose monogram with its oriental character has graced most of the illustrations that have appeared in "Baileya." Her predecessor, Marion Ruff, became Mrs. Sheehan and left the Hortorium when her husband, Dr. Thomas Sheehan, took a position as Extension Horticulturist at the University of Florida. Fortunately for the Hortorium, Mrs. Sheehan is able to continue to prepare plates for the projected new edition of the Cyclopedia.

With the passing of Liberty Hyde Bailey, the Hortorium has assumed the responsibility of ensuring continuity of three of his great works by means of new editions:

"Hortus Second," the next edition to be "Hortus III"; the "Manual of Cultivated Plants," of which the latest edition was published in 1949; and the "Standard Cyclopedia of Horticulture," of which the preparation of a new edition will follow completion of "Hortus III."

The production of each of these new editions is a major project. The story of "Hortus III" will appear in a later issue of "Baileya." It is sufficient to say here that each edition is a rewritten work, based on careful investigation of recent and early literature from many lands and in many languages, and on the studies of the plants themselves. These Hortorium publications are highly specialized reference works. Every effort is made to ensure their accuracy and completeness. It is doubtful whether any other American institution has the staff and facilities to take over their preparation.

In addition to these accomplishments, horticultural monographs have been prepared in the past and will continue. The last, by Dr. Bailey, published a few months before his death, was "The Garden of Bellflowers," a combined botanical and horticultural account, abundantly illustrated and with keys for the identification of genera and species, covering those campanulas and their relatives grown in North America. Hours before Dr. Moore sailed last October for a year's study in Europe, he delivered to the publisher the manuscript of an illustrated handbook of the cultivated Gesneriaceae—the gloxinias, achimenes, episcias, African violets, and their kin.

The preparation of these standard reference works requires a great amount of research, and this research is based mainly on the several large collections at the hortorium. These now number nearly 300,000 herbarium specimens, a library of over 6,000 volumes (adjunctive to the rich collection of botanical and horticultural literature in the two large general libraries at Cornell University), one of the three largest world-wide nursery and seed catalogue collections of the world, and a master card index of all current catalogues. While these collections are the basic "working

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Ferns for Our Gardens

PART 2

ELSE M. FRYE*

WOODLAND gardening is a wave which is gathering force and bids fair to leave some impress on our plantings. Possibly it is because even the by-the-day gardener is more or less difficult to procure. I choose to think that the exigencies of our times and the complication of our activities induce us to seek a more simple picture for our rest and recreation. It is true no other form of gardening can so safely be left to its own devices for short periods as a natural wildness. Another advantage: it permits a close planting which eliminates undesired weeds to some extent.

Few of us have not some outskirt place or neglected corner that would not be better for a little wild gardening. If the area is wide enough we might start with a tree, one whose roots go directly down and do not spread about. A pine or magnolia, for instance, would be suitable. If that cannot be compassed, a broad-leaved shrub, rhododendron or sourwood, pruned to interesting lines, might serve as an accenting mark. Ferns, the ground covering in great measure from the dark northern forests to the jungles of the tropic lands, will do much and with a minimum of labor to dress up our unconsidered nooks.

In our own country we have a plethora of ferns. One of our handsomest, bold in design, of rich dark green, is our common sword fern, *Polystichum munitum*. And if I could have only one fern of all that I know this is the one I should choose. It may be the dominating plant in a difficult narrow bed on the north side of a house or the background planting of a wider area. It is unnatural for this fern to fraternize in a grand mixture with ferns of paler leaves and more fragile textures. The sword fern is easily found in any woodland and is easily transplanted; it is not demanding as to soil. It is evergreen and holds its fronds proudly. In the spring, before the slender, scaly fiddle-necks are well on their way to unfurling, all worn and weather-beaten fronds should be cut away, not for the health of the plant but for the sake of general appearance.

The Vancouver fern, *Polystichum Andersonii,* was first found on Vancouver Island; it occurs from Alaska to California; I have never seen it in any great numbers together. The fronds develop around a central crown and curve elegantly backward. One distinguishing feature of this fern in summer is the proliferations that occur on the back of the rachis toward the apex. This is a means of multiplication. Being deciduous, the buds are brought to the ground when the frond collapses and there they take root, at least theoretically. A safer way in cultivation is to snip off the buds, put them in sand for a few weeks and when the roots are developed, transplant them. To do this one must make the difficult choice of having a ragged plant for the time being or more numerous plants in succeeding seasons. The color is a good green but the whole plant is a little less bold and crass than *Polystichum munitum*. I like this fern very much and find it fun to propagate.

We have several other polystichums in this region, less bold though evergreen, and valuable in the right place, which I think would be among rocks. These are *Polystichum lonchitis,* the holly fern; *Polystichum scopulinum,* the Eaton fern; and *Polystichum Lemmoni,* the Shasta fern. This occurs in Washington but was first found in the Mt. Shasta region. It has a most untidy habit of leaving a thick collar of undecomposed leaves around its base. I think it must need this collar—when we tidy it up to any extent it languishes.

The giant chain fern, *Woodwardia fimbriata,* is very common on small and large stream

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Giant chain fern (Woodwardia) in a Seattle garden, leaves 3 feet tall

(Fig. 5) —PHOTO BY DON NORMARK

*The first part of Mrs. T. C. Frye's article appeared in our Summer 1956 issue.

banks in California. I have seen a clayey railroad cut in California simply plastered with plants—old specimens to almost sporeling stage. It does occur in a few isolated spots in Washington and Oregon and grows exceedingly well here; in ordinary winters it holds its color. The new leaves come on slowly; it not only increases in height year by year, but also in circumference because offsets develop so that it becomes a multiple crown. These may be cut away from the parent to form others. It improves its appearance—if the shock does not kill it. This fern is more exotic-looking than the others mentioned and of more tropical dimensions, plants of twelve feet having been reported (fig. 5).

In any large piece of natural woodland we usually have crumbling stumps and rotted logs. It is a great mistake to burn or eradicate these ancients. They are the natural habitat of many little treasures. On them can be found little gardens of mosses, lichens, huckleberries of all kinds; maybe even the lovely little single-beauty *Moneses uniflora*. A gray or shredded trunk is the most beautiful setting for lady's-slippers or some proud fern. In such mold we often find the triangular wood-fern, *Dryopteris spinulosa* var. *dilatata*. It is a finely cut fern, triangular in shape, fragile and brittle. It does not endure rough handling; it likes decomposing wood best but will grow in moderately damp earth in the shade.

One of the pleasures of a trip to the mountains is the sight of the little oak fern, *Dryopteris Linneana,* an unbroken pattern extending back into the forest growth as far as eye can penetrate, pale with sunshine near the road and darker green with shade. It is one of the most beautiful of the smaller ferns and easily grown. It increases by running rootstocks and in time spreads about.

In a little canyon off White Horse Glacier, reached painfully and laboriously by lifting

and "swimming" over branches of vine maple, we found *Dryopteris phegopteris,* the beech fern. It was growing on huge boulders of purple rock. It is not often found so far south as this. It has a triangular, pinnatifid leaf, only the lower pinnae having very short stalks. It is short-haired over the leaves and possibly it is this characteristic which makes it look tougher than the oak fern. In our garden it is quite content with ordinary garden conditions but it does become yellowish early unless it is well watered and in the shade. But whatever the conditions, this rare fern creeps like the veriest weed.

On another peak in this vicinity we found *Asplenium trichomanes,* the maiden-hair spleenwort. This fern is found throughout the United States plentifully but at distant stations, from sea-level to high altitudes. It is almost evergreen and grows in tufts. The stems are four to eight inches long, brown-black and shining. The blade is narrow and made up of fifteen to thirty-five pairs of ovate, crenulate pinnae, a dull dark green. In this spot the plants were all growing in mold collected on rocks. In the garden it grows well in soil; we have even found sporelings. It is a favorite rock garden fern; very beautiful.

A closely related species, *Asplenium viride,* the green spleenwort, we found growing in Glacier National Park in several places. It is not nearly so amenable; I have not been fortunate with it. It wants lime, I think, as well as dampness of air and soil. In this little plant the stems are a bright green.

Mr. Carl English has a small stock of *Asplenium incisum* which he has grown from spores. It appears more delicate than the other two species but any one seeing it would want to try it, certainly.

A fern that will grow on a clay bank, on old logs or beside small streams or even on ordinary soil is the deer fern, *Struthiopteris spicant.* It usually forms a flat, plate-like rosette, the leaves rather spongy. The fruiting fronds are sent up from the center and often reach to twenty inches, the leaves curving and plume-like. It can be very ornamental when placed in the correct position. They frequently plaster a wet clay bank—all stages from the little shining heart-shaped prothallium, and tiny plants with but a single, simple leaf, to mature fronds.

On unnaturally sunny slopes, logged-off land, in swampy ground or the margins of streams we find many lady or swamp ferns, *Athyrium filixfemina,* growing in fountain-like tufts. The size, texture and green color are exactly dependent on the amount of moisture that is available. In the redwood forests I have seen it close to five feet tall and viewed dispassionately it is a handsome fern. But it multiplies itself so prodigiously and each little sporeling soon has a tenacious root system that it is not too easily eradicated. It is one of my most crowding and persistent weeds. Even if I were able I would not do away with it entirely.

We find colonies of the licorice fern, *Polypodium vulgare,* creeping through the mossy pelts that hang on the giant maple trees. It also grows on moss-covered rocks or even in soil. It differs from sword fern in that each little leaflet spreads out at the base and is attached to the main stem or rachis. In sword fern this is not so. It is a very variable species, almost evergreen where shade and moisture suffice; small and stunted and green only during the months of wet. Many a time I have brought home a colony that looked "different" only to find it take on its common characteristic as it grew along. Sports have been found in the Grants Pass region—I do not know the exact spot. These have the terminal leaflet split into many divisions. The large naked spore bodies catch the eye at once.

Bold designs always appeal to me; I like *Polypodium Scouleri,* the leathery polypod, especially for that reason. It may be seen on the coastal region from the Olympic peninsula into California. High in the crotches of trees in an accumulation of mold can be seen great colonies of it. Frequently they grow in the duff at the base of trees and the sporelings germinate on the trunks of trees where they

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***Polypodium Scouleri,* growing in Seattle, height 6 - 8 inches**

(Fig. 6) —PHOTO BY DON NORMARK

may be seen in all stages, from the tiniest, simple spathulate leaf to mature, pinnatifid leaves bearing huge clusters of golden-brown sori. The leaves are coriaceous and shining, a dark forest-green; beautiful. It is a difficult fern to grow; it longs for the salt-water mists to which it is accustomed. I was enchanted when I saw how Dr. Leo Hitchcock and Mr. Carl English had prepared a place for them; in their gardens they were growing on ends of old stumps or on decaying logs (fig. 6). When I succeeded in wishing away a plant from Mr. English we tried to do likewise and brought in a rotting log which we reconstructed; and further embellished it with bits of *Selaginella Douglasii.* I do not know yet what the last frightful winter has done to it.

Our beautiful fragile-looking maidenhair, *Adiantum pedatum,* is much hardier than its looks promise. It endures a certain amount of sun but is at its best in cool shade by trickling water or at least where there is some fresh seepage. In cultivation the plants should not be allowed to crowd each other for its airy loveliness is then lost.

From various high or northern stations we have a fern which in appearance might be called a depauperate form of our own maidenhair. Except in a collection it does not offer too much interest. It has been given specific rank, *Adiantum aleuticum.* There is also a dwarf form, really small and very appealing, of *Adiantum pedatum.* It has not been named yet; it is possible it also will be given specific rank. It is found on exposed cliffs from the Aleutian Islands and along the ocean coast of British Columbia and Washington. There are not too many in cultivation. Mr. English is growing it from spores.

There are other adiantums that do not have the "classic" five-finger form. *Adiantum emarginatum,* the California maidenhair, is pinnately two-to-three compound. It is a beautiful little fern but up here I have not been

able to keep it over winter. We found it first in the Grants Pass country. Farther south in California and on into the tropics we have found *Adiantum capillus-veneris* in moist ravines and open caves. It is correspondingly tender.

From the southeastern part of the United States I have several ferns that are very hardy; all but one deciduous. The *Osmundaceae* is one of the families that have persisted since carboniferous times. *Osmunda regalis,* the royal fern, is a very cosmopolitan fern; it roams north and south all over the world except the western side of the American continents. It seems strange to think of it in Newfoundland, Florida, Brazil, Asia and Africa. What has kept it from our western country? However, it does very well in our gardens. It has been reported as growing to eleven feet. The leaves are a beautiful pattern and a pale green. The fertile pinnae appear as a more olive-green tassel at the top of the leaves. We first found it in the grassy meadow country, wet too, of Mississippi, the base well shaded by grasses and other crowding perennials. Closely related is the cinnamon fern, *Osmunda cinnamomea,* in which the fruiting spikes come from the center of the crown, and *Osmunda claytonia,* the interrupted fern, in which the fruiting leaflets are somewhat below the top but on the main rachis. While this is very interesting, it is the least beautiful. In Florida, in old sinks and on almost pure coral substratum, we found a small fern belonging to this family also. It is the small pine fern, *Anemia adiantifolia.* In this the two lowest pinnae are modified to bear the sporangia. Except in size it is almost identical with the great fossil fern *Anemia Fremonti.* So chancy were the first fossil discoveries—

Below:

Ostrich fern *(Onoclea struthiopteris)* in Mrs. Frye's garden, height 3 - 3½ feet
(Fig. 7) —PHOTO BY DON NORMARK

this one was found by Captain John C. Fremont when he was hewing out a better route to Oregon in 1843. Needless to say, this little fern would not be hardy out-of-doors here and probably the kind of soil it is accustomed to is a necessity.

From this same region I have two other ferns that are handsome—the ostrich fern, *Onoclea struthiopteris* (fig. 7), and *Onoclea sensibilis,* the sensitive fern. Both grow to a great height and both have special fruiting fronds, that of the ostrich fern being plume-like. As far as I know the sensitive fern has not fruited in my garden. They both "travel" and I frequently have to ask someone to give them a home.

Dryopteris Robertiana also creeps; it has the same sort of ways as *Dryopteris Linneana* and *Dryopteris phegopteris,* though it is larger in all its parts and has blackish stems. It is a good ground cover.

Dryopteris emarginata is a near evergreen fern, a very pretty bluish-green and does well here. *Dryopteris Goldieana* is also a large and handsome fern and is perfectly hardy. I consider them distinct acquisitions.

In olden times when I was much younger and more brash, I attempted to grow a number of "rock ferns." I thought that plants could and, of course, would cooperate. Nothing is farther from the truth. I am the one who always had to cooperate and failing in this I lost my plants. This does not mean that others have not succeeded; many have, but with study of and consideration of the plant's needs. The two that are easy I shall mention first: *Cryptogramma acrostichoides,* the parsley fern, and *Pellaea densa,* the cliff brake. Oregon cliff brake, *Cheilanthes gracillima,* and the golden back fern, *Pityogramma triangu-*

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Below:

(Top) Dwarf form of *Adiantum pedatum*
(Center) Hart's tongue
(Below) *Polystichum setigerum* var. *plumosum*

(Fig. 8) —PHOTO BY DON NORMARK

Presto!

Frances Kinne Roberson*

MAGICIANS amuse audiences with illusions but any skillful propagator of plants can startle a more critical audience—himself—with actual results of his efforts in raising plants from cuttings. Many amateurs are experienced and successful propagators. A neighborly exchange of ideas among the readers of the Arboretum Bulletin may be a good route to better gardening. Questionnaires were sent out and the basis for this article is the information on those which were returned. This time we will discuss methods of vegetative propagation by cuttings.

No elaborate equipment is essential in this program. A simple but effective way of rooting Fatsia, Aucuba, Skimmia, ivy, Lysimachia and many other easy-to-root subjects demands no more equipment than a jar of water. The cuttings may even be pieces cut for arrangements and conserved for this secondary purpose. These are left in the jar, with stems immersed to considerable depth, until roots form when they are ready to pot up. Fatsia is reported to take three months to root. Aucuba often roots in three to four weeks. Opinions differ as to the amount of light required for best results. Certainly the direct rays of hot sun would be inhibitive.

Mrs. A. M. Sutton tells of "delightful surprises and successes" with difficult plants merely by selecting a shaded spot under a shrub where a mixture of well-soaked peat moss and sand can replace soil in a conveniently sized hole. Cuttings are then inserted. These are covered with glass jars ranging in size from a jelly glass to a quart jar according to the size and number of the cuttings.

Mrs. Earl Landreth reports a similar method used with good success for *Camellia Sasanqua* cuttings set in a flat and left open (no glass), but presumably kept in the shade, during the cool, moist summer of 1955.

A step in advance of this method is described by Mrs. A. B. Miller, who has used the same medium of sand and peat moss, but has placed the cuttings in a glass-covered box situated in good light but with no direct sun. The hardwood cuttings to be inserted in this frame were first dipped in hormone powder. Bottom heat was installed for the striking of holly cuttings.

Similar methods are followed by Robert E. Tindall, who uses half sand and half peat moss for rhododendron cuttings, but medium fine sand for heel cuttings of dwarf spruce. Bottom heat was used in both cases. Mr. Tindall emphasizes timing, not by the calendar but by the condition of the plant. He takes his spruce cuttings "just as the buds start swelling."

Simplicity of method for easily rooted cuttings finds favor with Mrs. W. H. Goering. She finds that not even a coldframe is required for laurel, Weigela, *Senecio Greyi* and many other plants which root readily in an open tub of sand located on the north side of a building. Mrs. Goering attributes her success to timing and to the assistance of a hormone powder.

Several ideas were contributed by Mrs. J. K. Holloway. Half-size flats mean less weight to lift. A light-weight rooting medium of half peat moss and half sponge rock also helps to lighten the load. An eighth part of sand may be added to this mixture for perennial cuttings. These are taken in the middle of the day and are dropped into a solution of Black Leaf 40 and then into a rooting hormone before being inserted in the rooting medium. Mrs. Holloway stresses the need for care in pressing the rooting medium tightly around the base of the cutting to the exclusion of air pockets.

Hybrid rhododendron cuttings such as "Britannia," "Earl of Athlone," "Elizabeth" and "Loder's White," rooted equally well when

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*Our thanks to Mrs. L. N. Roberson, of the Editorial Board, who compiled this information. The next issue will carry "Propagation by Seed," also interesting data received on the Questionnaires sent out.

taken the first of May or the first of September, according to Marie Laliberte. The temperature for rooting was maintained at 70 degrees F. and then reduced to 60 degrees. Rooted cuttings were removed from the medium and potted. Unrooted cuttings were reset in fresh rooting medium. (This presumably would discourage disease and insect attacks.)

The home gardener might also like the routine established by Mrs. Ray Brandes, who takes cuttings of heather, Vaccinium, Pernettya, Escallonia and Cotoneaster in the fall. These are treated with a rooting hormone and inserted in a mixture of half sand and half peat moss in a coldframe, the cover of which is removed after the heavy rains begin. Rooted plants are set in permanent places in spring. Geranium and chrysanthemum cuttings are taken in early summer, placed right in the garden with an inverted flower pot over each one, shaded for a few days, and rooted right in place.

Tips from Ed Manning refer to specific and varied types of plants which he handles in a greenhouse. Miniature rose cuttings do best for him when taken in late summer with a heel pulled from the old wood and trimmed. Hormone treatment and bottom heat speed up the process. Heather cuttings are taken from the new tip growth with the foliage stripped from the base of each cutting for better contact with the rooting medium, which is sand and peat moss.

Mr. Manning believes that more uniform perennial plants are derived from rooted cuttings than from divisions. Dianthus, Iberis, Phlox and others are taken in late summer from mature stems.

Past experience has indicated to A. L. Weiss that hardwood cuttings of conifers respond to a spray of water applied many times a day from a watering can or hose. This method, he says, was the forerunner of present-day automatic mist spray systems.

"Luck" gets the credit for success with clematis cuttings, according to Mrs. Charles T. Jordan. Late summer cuttings respond well. Opinions differ as to where to cut but halfway between nodes is usual. Roots develop at the cut rather than at the node.

Mrs. T. C. Frye refers to a dependable reference bulletin, "The Propagation of Some Trees and Shrubs by Cuttings," by Massachusetts Agricultural Experiment Station (March 1941). Observation has indicated to Mrs. Frye that Andromeda and Pieris cuttings root best when taken as late as September or October and that Japanese Quince must be taken when the stems are yet green. Best success with dwarf conifers resulted from the use of a liquid hormone used exactly according to the manufacturer's instructions.

These hints from people who have an interest in propagating plants highlight several facts.

1. Simple methods can achieve results.
2. Experience coupled with careful observation will provide a liberal education. Nature's laws do not change, we just understand them better as we study them.
3. Timing depends on plant condition rather than the calendar. Climatic and other environmental conditions vary too much to expect plants to arrive at the same stage of development at a given date each year.
4. There are many ways, not just one, to propagate plants by cuttings.
5. Reading with an open mind, followed by action tempered with common sense which adapts rather than adopts rules, is a safe route to success in this field.

We hope the bits of garden gossip presented here will inspire more people to enjoy this hobby.

* * *

He leaped the fence and saw that all nature was a garden.—Horace Walpole.

* * *

The morns are meeker than they were,
The nuts are getting brown;
The berry's cheek is plumper,
The rose is out of town.
The maple wears a gayer scarf,
The field a scarlet gown,
Lest I should be old-fashioned,
I'll put a trinket on.

Emily Dickinson

Some of My Experiences in Raising Large Flowered Clematis from Seed

Faris M. Blair, A.B., M.D.*

THERE are many varieties of large flowered clematis in commerce. Most of them have very beautiful individual blooms and many make a very pleasing show when allowed to develop into large vines. Continuous bloom is not to be expected as each variety seems to choose its own time for greatest show. Some varieties have a second period of scattered bloom. They vary in their response to pruning so that it is necessary to learn how to manage each variety.

I had the varieties Ramona and Jackmanii in my yard for many years and derived much pleasure from them. Jackmanii is a deep purple that begins to bloom in late June or early July. It is very convenient to manage Jackmanii because it can be pruned to the ground in winter so that you can get rid of as much of the vine as necessity calls for and then a very vigorous growth develops and blooms as stated. This is probably the variety that is seen more than any other, it being one of the oldest (1860) and perhaps most dependable for the general nursery trade. It is seen often in the city and makes a particularly pretty picture growing beside a white house on a farm. Ramona has a larger flower than Jackmanii, the color is mauve or deep blue with dark stamens and anthers, but the color varies with the season and other conditions. It is a vigorous plant and the blooms usually evoke remarks of admiration.

As my acquaintance with clematis varieties increased I began to add to my collection. The most striking of the lot is a very large pure white that usually measures between six and seven inches in diameter, sometimes a little more. In the past, names got juggled around and changed to suit the whim or avarice of the nursery selling a plant, and sometimes, mistakes were honestly made. The first one of these choice whites that I saw was named Marie Boisselot. When I learned this I began a search for a place to buy it but was not successful becaue the nurseries contacted had been in the habit of importing their plants. At that time the war was on and it was not possible to import plants. At that time I usually drove along 23rd Avenue on my way to and from work and noticed a beautiful white clematis in a yard. In time I developed enough courage or plain cheek to stop and inquire about that plant. The man did not know the name of the plant but offered to sell it to me. He had gotten the plant from the nursery stock of his brother who had died. A plant, said to be Marie Boisselot, was given to me. I bought *lanuginosa* Candida from an eastern nursery and, a couple of years ago, Madame Le Coultre, which had once been recommended by Layritz' nursery as the best white. These plants from four different sources with three different names have the same habit of growth and time of blooming, the blooms are so much alike that I am not able to tell the difference. Marie Boisselot is a good name, so I will use it.

All of these large white clematis form many good seeds, about seventy-five to a cluster. The seed is much the shape of a flat arrowhead that has a feathery tail about two and three-eighths inches long and has a slightly spiral shape. This tail is an elongated style. The seeds are attached to a central pad, the botanical name of which I do not know, and the tails radiate in a spiral from that central area. When ripe the cluster of seeds has the appearance of a white pompon. In some varieties the embryo does not fill out and is a small, shrivelled imitation of a seed though the feathery tail may be formed. At times, one seed that looks good may form among the ones that seem empty. In some varieties, as in the white one, most of the seeds appear plump and viable.

I had felt that the usual clematis seed would not be likely to germinate and had

*Dr. Blair, whose interest in plants extends to a wide field, brings us this informative discussion covering one of his specialties.

made no effort to raise seedlings until I found volunteer seedlings growing in various places around the yard. At first I tried to transplant the volunteers but had very little success in getting them to live. I then allowed them to develop where they were growing until the plant had become large enough to tolerate the interference. It is possible that any one seedling might produce a variety that is worthwhile, and again, it might be worthless. Of course, we would not have hybrid plants if seeds had not germinated, yet, a hybrid may be sterile. Having found that volunteers would appear I followed the clue and planted a lot of seed of the one named Marie Boisselot. I did this as soon as I could after the seed was ripe in the fall. I packed the seed into a pot of sterilized soil, covered it with copper window screen wire to discourage slugs, birds and other meddlers. I sank the pot in the ground on a bank just a few feet east of my house. I let Nature take her course except when water was needed. I watched for seedlings through the spring and summer but none appeared until late September or early October. They then began to shoot up in abundance, looking much like miniature asparagus shoots. I did not disturb the seedlings until Thanksgiving time, when I put the pot into the small greenhouse. The seedlings were pushing up through the wire screen, so, I removed the wire, damaging some of the seedlings. After a time most of the seedlings damped off and the pot was put outdoors again. Several plants developed but I lost track of them.

The above experience led me to plant the same kind of seed in a small flat when the following season's crop of seed was ripe in the fall. The flat was left out in the open. No seedling appeared until early the following fall when many of them began to show. Some of them made a vine several inches long with multiple fleshy roots radiating from the center, much like a mature clematis plant; these I potted in December. Most of the other seedlings had only one long straight root like a tap root. After potting as many as I could I packed the remaining multitude of seedlings back into the flat. The final result was a disappointment for most of them passed out in spite of loving if misdirected care.

The following year I collected seeds again in the fall when they were ripe, but this time I collected from several different varieties and kept each variety separate until I could take time to plant them. I put each variety in a separate paper bag as I collected them and labelled each bag carefully. As nature tends to plant seeds as soon as they are ripe, that could be a guide to us. I do not know how long clematis seeds can be kept before planting. If the seeds are not gathered as soon as ripe the wind and rain will tear them loose and blow them away. They could then lodge in some loose material and wiggle their way down into a place where they could germinate. I have watched the seed wiggle and twist as the wind blew on that feathery tail and worked its way deeper and deeper into loose material. The seeds picked this time were from Prinz Hendrik, Comtesse de Bouchard and a hybrid bought from the Swiss Floral Co. of Portland. I planted these in separate labelled pots on 1-13-52 and kept them in the greenhouse. There was no germination until

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Clematis seedling No. 13 in the garden of Dr. Faris Blair, Seattle.
Flowers palest lavender, 4½ inches diameter.
(Fig. 9) —PHOTO BY DON NORMARK

Now, What Shall We Do?

These three articles, from three of our local landscape architects, were requested by the Editorial Board in order to discover whether any major changes in planting plans had been necessitated by the abnormal cold weather of November 1955. We believe they will be timely and helpful to many of our readers.

NOBLE HOGGSON

I.

SHORTLY after the Great Freeze of November 1955, a disaster to home owners, nurserymen and growers alike, the experts rushed out to tally the wilted blooms and barren bushes. Conditions looked hopeless, and many took refuge in a possible income tax deduction to help defray at least part of the loss. The energetic ones and the pessimists, possibly influenced by those experts who otherwise make a living by selling new shrubs, promptly tore out and burned up everything with brown leaves or bare branches, and then replanted with whatever shrubs the nurseries had left. Even our Park Department seemed to catch the fever. The lazy ones and the optimists, however, let their bare branches stand, perhaps more because they hated to face the carnage until later good weather drove them out of doors.

The surprise and joy were universal. New shoots were showing along the tragically naked stems, and from under a sodden mulch of fallen foliage were appearing bright new leaves. Plants in which the experts had failed to find a sign of growth or a spot of hopefully green cambium were coming to life. The pessimists still shook their hoary beards and said it was just a last gasp—a flicker of life remaining in the bud. When the blooms appeared, sparse it is true, they said the first hot weather would kill them off. But April and May stayed clear, dry and hot and still the leaves remained on. An occasional plant would green up, struggle along and then die and here and there a branch would wither up. But on the whole, except for the really hardy, unaffected shrubs, our Northwest trees and shrubs have made a really miraculous recovery.

What caused such devastation last fall? Many plants which withstood the considerably colder freeze of January 1950 succumbed to this one. Many of our native trees which have lived through half a century of frost, including the searing sunburn of bright sunshine on snow in 1950, died this year in their own natural environment. Why, in the case of twin shrubs standing together under identical conditions of food, moisture, soil and exposure, should one die and the other survive with hardly a blemish? In my opinion the 100° F. day of June 9, 1955 set back our plants more than we realized at the time and the warm fall following caused them to continue growing beyond their normal season to make up for the shock of the previous June. Then the sudden freeze caught them with their leaves on. The cold, clear air, wind and bright sun joined with the frost in burning the foliage, particularly on the conifers, and causing the leaves of normally hardy plants to wilt before their time, thereby upsetting the normal growing and sleeping balance of nature. To explain the puzzling deaths of individual plants and the survival of adjacent ones would take a greater scientist than I pretend to be. But I know that plants of the same varieties have reached our local nurseries from many sources. Some of the original plants were undoubtedly hardier than others and this hardiness or tenderness has come down through the generations to our plants. Cuttings from one shrub survived alongside the parent while those from another which froze also died. Strength characteristics are inherent in seedlings and are equally true in the ancestors of our own garden victims which were propagated by man.

Few but the very hardiest of our many broadleaf evergreens seem to have entirely escaped the effects of the freeze and many of our more tender conifers suffered badly. Even the deciduous trees and shrubs which

normally held their leaves late, such as weeping willows, were badly damaged if not killed outright. But those whose annual cycle had already been almost completed seemed the least affected and leafed out as well this spring as usual. It would be useless to try to list all the plants which suffered from the freeze as most of them, even the "fishbone" *Cotoneaster horizontalis* which has blotched the landscape all winter, have by now come back into new if minute glory. And urged by large undamaged root systems, these little plants will put on a phenomenal growth this summer and fall. Even my tender *Rhododendron* Fabia, which froze to the ground in 1950 and revived from the roots to become a flower-covered four-foot shrub, is again recovering from the ground and is already a vigorous 18 inches tall. Nature certainly appears to work miracles in its effort to survive. After the 1950 freeze many nurserymen were heard to swear off ever again handling anything but the hardiest plants. Some people envisioned the future Northwest landscaped with nothing but boxwood, Kalmia and the hardy deciduous shrubs of New England. Yet we came back to the photinias, daphnes, osmareas and many other broadleaf evergreens which at the time seemed gone forever. Now that we have had a second bad freeze, what is the outlook for ornamental shrubbery in the immediate future?

This is of course entirely one man's opinion and only that. I have no crystal ball, little scientific knowledge except, as Will Rogers used to say "what I read in the papers," and my personal experience in the Northwest extends over only a quarter of a century of relatively mild weather. In my opinion there have always been and will always be bad years and good years. Also I believe that great climatic changes occur only over a period of hundreds of centuries. This makes me an optimist. I frankly admit that 1955 was a bad year and perhaps not the last one we will see, sunspots and other unknowns notwithstanding. As time goes by and astronomy develops and even space travel becomes commonplace, we will be able to learn much more about the weather and perhaps may even be able to do something about it. At present we can judge only by past records and guess that such a severe and early freeze will not happen often.

However our recent "weather," despite the loss both financial and aesthetic it has caused, has in some cases been a blessing in disguise. Many of the older properties landscaped years ago have finally grown far beyond their peak of beauty. Owners have been slow to notice the increasing crowding of trees and shrubs, and some even have the attitude that it is somehow a sacrilege to interfere with nature's growth. By killing back many shrubs important in the home planting this freeze has created great empty spots which should be filled. Available nursery stock is often too small to match the remaining mature plants. The solution resorted to by many owners is to redesign their plantings, using in the most important areas their own mature plants and filling the less prominent areas with the newer varieties in smaller sized plants, letting them mature together without competing with the older shrubs. The need to redesign is a hidden blessing for it gives a twofold opportunity: to separate trees and shrubs already getting ruined by overcrowding, and in so doing to landscape a larger area with the same shrubs, thereby giving the owner more for his money.

As to the effects of the freeze on future landscaping, it is this optimist's opinion that we should pretty much go on as we have been doing. Perhaps there has been in the past too much effort to stretch the plant zones to include many tender plants. But experimenting is fun and without it we would have missed many of our favorite shrubs of today. I might suggest that many nurseries are too interested in selling the public favorites of yesterday, and not bending enough effort to introduce and create a demand for many beautiful and reasonable hardy plants known and grown elsewhere. But remember that in this life there is no absolute surety and even our hardiest plants occasionally seem to die from mysterious causes. There may be years of enjoyment of our beautiful plants before such

a frost hits again and I feel it is worth the gamble. So let us go on planting our old favorites and ever newer ones later to be acclimated, and continue to enjoy the color and beauty of our plant materials which have long made our Pacific Northwest famous throughout the world.

II.

GLEN HUNT

THE question has been asked, "What have been the effects of the freeze on the field of landscape design and its related industries?" How are we going to improve our gardens—what are we going to plant—how can we avoid costly mistakes in the future?

Notwithstanding the loss of valuable plants, many good things have come from our "unusual" weather. There has developed a wider recognition of the importance of garden design. Many people, after seeing the loss of key plants in their garden—the laurel hedge, a large cypress in front of their picture window or a choice rhododendron—saw their garden in its skeleton stage for the first time. What they saw in many instances was not good, and it inspired the desire for better organization as they thought of replanting. Those who had given little thought to their plantings suddenly wanted to know what they had lost, some things they were happy to be rid of, some things they recognized as having been planted in wrong places, and some things were lost as dear friends. They were encouraged to learn the names of their plants and have been asking for them at the nurseries by name—the botanical one at that!

In a recent series of garden tours, conducted for students of the evening school classes in Landscape Design at the University of Washington, it was obvious to the students that the gardens which were developed from a plan to meet the specific needs of the homeowners "survived" the winter better, despite losses of plant materials. The secret was that the space organization "survived" — the established pattern of unity between the house and garden. This *unity* is what is meant by garden design and it varies with the requirements of each family, house and site.

A frequent requirement of many families today is that the garden be "maintenance free." Actually, we can lean our design in this direction by the use of varied pavings as colors and textures; also by the use of structural elements such as fences, screens, walls, steps and raised or lowered areas of subordinate interest materials like crushed rock, gravel and sand. In the final analysis it is not desirable to use these inanimate materials only, or even let them dominate the outdoor areas. There must be proper balance. We have a wealth of plants in the Pacific Northwest which can be combined with them either through contrast or harmony, for example:

Grey foliage creeping junipers against grey paving aggregate or black concrete;

Grey foliage plants with brick pavings;

Lush green rhododendrons and rich woods;

A delicate foliage against small aggregates or sandstone.

The selection of surfacing materials can integrate the design and, combined with planting groups of perennial ground cover, dwarf or "liner-sized" broadleaved evergreens, alpines or native ground covers in large masses or small sections can intensify the visual interest. Terraces, patios, loggias and entry courts will become places to enjoy our gardening and maintenance will be cut to a minimum. Greater enjoyment will be gained from growing "favorite" plants. The examination of the garden and all its parts by the homeowner or professional designer, in the light of the recent weather, and in the light of the aforementioned ideas, will extract new solutions and new planting schemes.

Every plant has a place but NOT in EVERY garden. Plants must be used in unity with each other and in harmony with the over-all structure of the garden. We would not think of building a fence by using different types of boards side by side; however, we have seen the interesting combina-

tions of fences and screens of two different materials and textures. The question of how to accomplish this effect with plants arises with regard to our design for this spring and next spring, over past seasons.

The first step is the selection of trees to fit the garden plan. Emphasis on trees will aid us in reaching our goal more quickly and we can surmount losses of other plants with trees. They give us a permanent structural unit effect much sooner than many other types of plants. A trip through our local nurseries will show us the types of trees that survived and are available for the purposes of structural division and shelter. Small trees, scaled to fit small gardens, can reinforce the basic design, enclose the area and establish the space even before the garden is clothed with other types of plant materials. Trees such as magnolias, dogwoods, small maples, sumacs, crabapples, sourwood, cutleaf weeping birches, Styrax, dwarf fruit trees, etc., planted in rows, masses or groups, will furnish the desired enclosures and provide beauty and year 'round interest. Shade trees such as Schwedler maples, Japanese Pagoda trees *(Sophora japonica),* catalpas, red oaks, apples, flowering plums, pine trees (including scots pine, jack pine, shore pine, etc.) will give us protection and screening. These trees become an integrated part of the basic design. They are available now in larger sizes and should be considered, if revamping or planning a new garden. They are the accent plants for which shrubs or ground covers act as the supporting structure.

The basic idea of planting design is "unity," achieved by planning our end goal. The weather condition did not change our theories, although it might prolong our schedule for completion. We are forced to do more original thinking, due to lack of certain basic plants. This will increase originality and keep our designs from becoming sterile; in fact, it will force quality in our thinking. The necessity for choosing specimen size plant materials, for use in accent areas or focal points, has been brought to light. Heretofore we selected certain plants, or a combination of plants, for accent and interest and awaited their ultimate size. Now, large mature or nearly mature plants are being planted in certain key areas as accents or focal points. These plants could be the small trees mentioned, large rhododendrons, or combinations of plant materials that supply contrast through texture, foliage or form, or become a foil for construction materials. They can be purchased for a comparatively small amount, when measured against the cost of buying immature plants. Their worth is proven—we can enjoy them NOW.

Many of the supporting plants between the main points of interest may be smaller. These are also available. In two or three years they will develop into plants of size which will add to the enjoyment of the garden—not competing with the large specimen but becoming subordinate interest spots; not interfering with the unified planning, the basic concept. The container-size plants are included in this category but care should be exercised to assure the selection of genus, species and varieties that are known for their hardiness in the zones where they are to be planted. The emphasis on lower maintenance of ground surfaces has promoted the use of various types of ground covers, both woody and herbaceous. These, too, are classed as supporting plants and are another step in the direction of lower maintenance, providing one's back is still in place after two or three years of weeding to enjoy the fruits of his labor. The overworked *Vinca minor* (Periwinkle) and *Ajuga reptans* (Carpet Bugle) are the commonest of these and are readily available. The perennials that are available, in quantity, are the Hostas (Plantain lilies), saxifrages and Bergenias in variety, Astilbe, Hellebores, Hemerocallis (Daylilies), Baltic Ivy, Epimediums, sweet woodruff. These should be planted in large groups or masses. For sun we have materials such as the Sedums, saxifrage, beargrass, dwarf Vacciniums and Gaultherias. The local supply of heathers, heaths and bell heathers is practically nil, particularly in sizes of 12-15

inches. Plant band sizes are available and will make a good showing in two or three years, if given proper care. More emphasis has been put on the Junipers, particularly varieties of *Juniperus horizontalis* (Andorra, Waukegan and Bar Harbor junipers). People are turning to our native ground covers, however, many of them were affected and there is always the initial problem of obtaining, transplanting and maintaining them. Another type of ground cover is GRASS, not affected by the freeze and still the easiest to maintain, providing good bed preparation and seed is used.

SUMMARY

1. People are more garden-conscious due to the freeze.
2. No matter what plants were lost or at present unavailable, there is no substitute for proper planning.
3. With a plan to fit the individual's need, selection of trees, specimen plants and supporting plants becomes easier and each finds its proper place in the garden.
4. People are recognizing that landscape design is an art and a science and how they can be better served by those who specialize in it and related fields of horticulture and nursery practice.
5. A combination of plants and structural elements will give unity, use, interest and beauty to our Pacific Northwest homes and gardens.

III.

OLIVER ESTER

AS a people, when we are hard pressed, we turn instinctively to the Scriptures for inspiration, solace, and guidance.

Often our ways have seemed difficult; we have been harassed by fire, by earthquake, by wind and by water. Now the challenge is by frost. It appeared as though the whole Northwest was blighted. We hardly dared hope to see a flower in the spring.

As I passed through the gardens and saw the destruction on every side, I was reminded of verses 11 and 12 of Chapter XIX, I Kings . . . "But the Lord was not in the wind, and after the wind an earthquake, but the Lord was not in the earthquake, and after the earthquake a fire, but the Lord was not in the fire; and after the fire, a still small voice."

It was the still small voice we were waiting for. It bade us get up and get going. It urged us to build better as did others after the earthquake. It encouraged us to build more wisely as they did after the fire.

We have been shaken from our lethargy and stereotyped ways of designing. Now we realize that these things can happen to us.

Improvements are already visible in many gardens, as overgrown and neglected shrubs are cleared away. Unsuitable material that should have been discarded years ago, but had to be held on to because dear old Aunt Lucy had planted them when she was just a little girl, is out of the way.

Now that the great laurels, rhododendrons, Lawson cypresses and Retinospora that had been towering in front of the living room windows are gone, we are amazed to see how pleasant it is to have light in the room.

Truly a Great Blessing has been sent down on us.

It is evident that more thought must be given to the designing of our gardens in the future. We have had two bad winters not far apart, and we should be alert to the possibility that it might happen again.

By this I do not mean that we should discard everything that did not prove hardy enough to survive the past winter. Many shrubs and trees were damaged or killed that would have come through easily had we a few earlier frosts.

In future planning it is essential that the main framework of the garden should be developed with material that can stand severe conditions.

A wider use of conifers can be expected, but care should be taken that their use is not overdone. In years past it was considered necessary to smother a house with conifers in order to have a well-planted garden. We have outgrown that idea.

It would be a tragedy indeed if we were never to see a "Unique" rhododendron in

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Arboretum Spotlight

Sorbus discolor

THE common mountain ash, *Sorbus aucuparia,* is one of the most colorful of the berrying trees, with its bright red and orange clusters of "berries" so attractive to children and birds alike. This tree is so plentiful that we tend to forget it is only one of a very large genus.

In the Arboretum's collection of Sorbus, which includes some 31 species, it would be difficult to pick out one that was better than the rest; however, *Sorbus discolor,* a native of North China, would certainly be included among the top five. It has many things that a good tree should have; handsome foliage rather similar to the common mountain ash, large clusters of white flowers in mid-May, small stature for the smaller garden, seldom reaching 30 feet high, attractive bunches of fruit in August or September that persist until late November, and finally a bright red fall leaf color.

It is the fruit that attracts our attention now, for the tree is covered with four- to six-inch clusters of shining apricot-pink "berries," each about ⅓ inch long and rather longer than wide. (fig. 10.) These "berries" (botanically they are pomes) are said to occur in milk-white, pale yellowish-red, or brilliant orange-red, as well as in the pale pink of our trees.

We received seeds of *Sorbus discolor* from the Morton Arboretum, Lisle, Illinois, in 1941, and raised a number of seedlings from it. The largest plant is now about ten feet tall and growing near the service road in the Winkenwerder Memorial area, just east of the crabapple and rose collections. There is another smaller tree in the new Sorbus collection across the Upper Road from the Magnolia section. Both are brightly decked with their bead-like fruit this autumn. They are truly charming trees.

—J. A. WITT

Below:

Fruiting branch of *Sorbus discolor,* berries flesh-pink, glossy, up to ½ inch long. August 1956.

(Fig. 10) —PHOTO BY DON NORMARK

Japanese Trees in Our Arboretum

PAT BALLARD*

"A GARDEN of flowers floating in the Western Pacific." Thus have the poets of Japan described their country, and a very apt description it is, for Nippon's islands have provided the gardeners of the world with some of their most treasured trees and shrubs. The climate is one of extremes, from practically subarctic in the north to almost tropical in the south, and the flora is understandably affected by the cold winter winds from Siberia that sweep across northern Hokkaido, and by the warm rains of the southern islands. Walter Weston, in a *National Geographic Magazine* article, makes the statement that Japan's flora "includes half the known varieties of the earth's vegetation in an area only a little larger than that of the British Isles."

It was this embarrassment of riches that forced us to make a choice when we began to study the Japanese plant material growing in the University of Washington Arboretum. One afternoon spent with the card index gave us several pages of varieties and forms of just one species of maple, and we were, as yet, not very far into the "A's." So we have had to limit ourselves to the *trees* among these attractive emigrants from the other side of the Pacific.

Japanese gardens are marvels of simplicity and restraint. With countless superb shrubs and trees from which to choose, the designer paints his picture with sand, stones, water and architectural structures as well as with plant material. It is interesting that with such a magnificence of material at hand there should have evolved a landscape design that is restrained to the point of austerity. A Japanese garden has those basic elements common to all creative art; proportion and balance, mass and contrast, line and texture, but above all an understanding and control of the media. Samuel Newsom *(A Thousand Years of Japanese Gardening)* says that a Japanese planting must have four seasons' beauty; that there must be no apparent empty spots during the winter; that the deciduous plant material is chosen for its skeletal form, and then for the texture and color of its leaves. Its blossoms are a final and minor consideration. Among the native trees and shrubs there are species so beautifully graceful and so picturesque, structurally, that they might have been designed to fit just these requirements. We can hardly think of a Japanese garden without picturing a gnarled pine sweeping out over water, and what could be more effective against a background of evergreen foliage than an enkianthus with its whorled branches dripping with softly tinted bells in the spring, its leaves aflame with autumn color, or its bare branchlets like cupped hands holding the winter's snow?

The climate of the Pacific Northwest is usually kind to the plants of the Orient (we will not allow ourselves to dwell too much upon last November's harsh treatment) and our arboretum has received plants and seeds from botanical gardens and nurseries there, and is growing many whose original home was in Japan but that came to us from other sources.

Mr. Newsom says that "pine trees form the principal ornament in many gardens . . ." and that "the Japanese red pine *(Pinus densiflora)* is said to be ". . . the most beautiful of all garden trees." Some were damaged here last fall but there are several that are beginning to show the characteristically graceful habit of their red-toned trunks. Perhaps the best is at the top of the hill not far from the Nursery.

Dr. Charles Sprague Sargent *(Forest Flora of Japan)* differs with Mr. Newsom and says that the pine most often seen in Japanese gardens and most revered by the Japanese is *Pinus Thunbergii.* It is often irregular in form and has blackish-gray bark. John Grant calls it ". . . one of the handsomest of the larger pines for gardens here." In its homeland this pine is considered "masculine" and the red pine is said to be "feminine." *P. Thunbergii*

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*Another article by Mrs. Page Ballard, of the Editorial Board, who covers the subject in her usual thorough manner.

was severely damaged by last year's cold weather.

Pinus parviflora (syn. *P. pentaphylla)* is a five-needled pine with rather stiff brushy tufts at the ends of its branchlets. So far we have only young plants, still in frames, but perhaps we should all take more notice of this hardy pine which in maturity has wide-spreading branches and dark-green foliage. Since it is naturally a smaller tree than the other two this is the pine that is often used for dwarfing by Bonsai artists.

Several centuries ago provincial chiefs throughout Japan were asked to contribute toward the building of certain shrines. One chieftain, who had no treasure to share, sent thousands of young conifers which today are cherished by pilgrims and visitors to the shrines at Nikko. Some say they were chamaecyparis and others insist that they must have been cryptomerias. There are so many of each genus growing at Nikko that it might have been either. The Hinoki, or False cypress *(Chamaecyparis obtusa),* is one of Japan's five most valuable timber trees, and grows at an elevation of 2,000 to 5,000 feet. The type is a tree of about 100 feet with deep-green foliage, but there are a great many forms of this species which show great variation in habit, size and color. Rehder rates its hardiness at Zone III, but almost all individuals of the seven or more forms growing in the Arboretum were killed last winter.

C. pisifera, the Sawara cypress, grows at about the same altitude and is placed in the same hardiness zone. Much to everyone's surprise they came through the same severe conditions with hardly any damage. The Sawara is a large tree in Japan and, like the Hinoki, is often planted in temple grounds, and sacred buildings are built of its wood. This species is represented by a number of varieties in Arboretum plantings, among them what was at one time known as Retinospora (a name no longer in good standing) and now given varietal status. Chamaecyparis and Thuja are like the Sequoia in having juvenile leaves which are quite different from those of older trees, and in some cases this needle-like foliage is retained for an indefinite period. Offspring may be assured of possessing this same type of leaf by vegetative propagation.

Cryptomeria japonica is the only species of its genus and has been compared to our Douglas fir in importance as one of the great timber trees of the world. The type would be out of scale in any but the larger gardens but there are a number of its forms which are more usable. There are dwarf forms of this in the rock wall near the greenhouse and in the rock garden on the Boulevard. *C. j. sekkasugi* (var. *cristata*) is in the Pinetum and *C. j. pygmaea* is planted at the north end of the original McEwan planting.

Picea polita, the Tigertail spruce, is another of Japan's big trees that never attains the same stature in cultivation as it does under natural conditions. It is striking in its stiff habit, its large spiny leaves, and conspicuous winter-buds. We have it in the bed of rhododendrons just west of the Magnolia section, and have found it very hardy.

Tsuga Sieboldii differs from other hemlocks by having untoothed leaf margins. It is rather slow growing but outstanding for its grace of habit. The specimens growing on the ridge between Loderi Valley and Woodland Garden were grown from seed sent to us by the Kyoto Botanical Garden in 1941.

Sciadopitys verticillata is extremely interesting botanically as well as esthetically. It has two types of leaves, according to Dr. Rehder, tiny scale-like organisms from whose axils come the vigorous needle-like growths in whorls that give it the common name of Umbrella pine. This species is growing in the *Leguminosae* area, east of the Upper Road.

Thujopsis dolabrata is another of the very decorative conifers in the Pinetum. Its frond-like branchlets are broader than those of the Thujas from which it is separated botanically by having more seeds on the cone-scales (3-5 instead of 2). In its native home it seldom grows taller than 50 feet and there are forms which are definitely shrubby.

Larix leptolepis is one of the handsomest and fastest growing of the larches. It is beautiful in the spring when its pale new foliage bursts

forth, and again in the autumn after the first frosts have gilded its needles. It is thought to be more resistant to pests than some of its allies. Our Japanese larches are at the south end of Azalea Way where they can be seen from the Boulevard.

When we go on to Foster's Island, almost the first alder we see is the Japanese species, *Alnus japonica,* whose very narrow, tapered leaves make it quite distinct from our native alders. Several other species of alder from Japan were damaged by the winter's frosts.

Carpinus cordata, also a member of the Birch family, is growing between Broadmoor's north gate and the Lagoon.

Three species of the Japanese Birches are found on Foster's Island, as well as in other sections of the Arboretum. *Betula Ermanii,* with reddish to almost white bark, grows to about 75 feet. *B. Maximowicziana* is particularly interesting for its very large leaves and its pale orange or gray bark. *Betula mandshurica* has white bark and is one of the better birches for garden use.

Several of the Japanese oaks suffered winter damage but three species are to be found in the Oak section of the Arboretum: *Q. variabilis, Q. dentata,* and *Q. aliena. Q. dentata* is unusual because of its very large leaves, sometimes as long as 12 inches and half as wide. *Q. aliena* has obovate leaves with rather prominent ribbing.

A Japanese tree of the Legume family grows in the *Leguminosae* section of the Arboretum. *Maackia amurensis Buergeri* is planted just north of the brooms, and shows its upright racemes of white flowers in late July and early August. It will grow as tall as 40 feet in the wild.

The Rose family is responsible for some of our most beautiful flowering trees and Japan has given us many outstanding species in this group. The sad story of the Japanese flowering cherries in the Arboretum was told in our Summer issue *(Winter Hardiness of the Flowering Cherries* by B. O. Mulligan and J. A. Witt). Our flowering cherries bring many visitors to the Arboretum each spring and they wander down Azalea Way identifying each variety with the aid of an interesting little leaflet, *Cherry Time.* The Japanese are partial to the single-flowered forms of the cherries and consider double varieties rather vulgar and overdone. We, too, appreciate the delicate beauty of the single-blossomed type, but it is hard to resist the splash of color offered by the double blooms.

We still have some cherries and each spring blossom will seem the more precious when we remember those that could not withstand the bitter November frost of 1955. Ukon is yellow flowered and one of the hardier. A 20-foot tree stands just opposite the office driveway and with its bronzy new growth and chartreuse blossoms it gives us something different in flowering trees. Kwanzan is not so easy to use in the average garden as it is stiff and large, but it was less damaged than most and its large pink blossoms and brown-green foliage can be seen on the south side of Azalea Way not far from the Upper Road. *P. Sargentii* was unharmed and flowered well in a southern exposure on the right as we walk along Azalea Way. *P. subhirtella* var. *stellata* is probably the most resistant of that species and bloomed in April, as usual. One of the earlier blooming Yedo cherries is Yoshino, which came through the ordeal without damage and brought joy to our hearts with its pink buds which opened to single white flowers. The Whitcomb cherry, pride of so many Northwest gardens, was practically undamaged though its blooms were somewhat sparse this year. (In some gardens it showed progressive dying back during the late spring and early summer but seems to be putting forth healthy new growth now.)

If you must have food for your body as well as for your soul, the crab apples are the trees for your garden. They have much in their favor for they give us clouds of flowers in the spring, the beauty of their brightly-colored fruits in the early autumn, and preserves and jellies for our winter enjoyment if we are domestically inclined.

Malus Sieboldii, the Toringo crab, seldom grows to more than 15 feet in our gardens but is double that size in its Japanese home. It

is different from its kin in having its leaves sometimes deeply cut, and in its tiny fruits. Rosy flowers are produced in April, and red, or brownish-yellow, fruit in the autumn. *M. Sargentii* is shrublike in form and rarely grows to more than 8 feet in height. It, too, often has lobed leaves and is valuable for its white flowers, its attractive deep-red fruit, and its fall coloring. *M. Sieboldii* is the parent of several interesting hybrids and one of its more promising offspring is *M. Zumi* whose other parent is *M. baccata* var. *mandshurica*. *M. Zumi* has oblong leaves that are seldom lobed, wider flowers with less crowded petals than those of *M. Sargentii,* and larger red fruits than those of *M. Sieboldii.*

In the Crab Apple Section at the north end of the Arboretum we will also find *Malus floribunda,* with deep pink blossoms that fade to white but not so heavy a crop of fruit as the others, and *M. Halliana* var. *Parkmanii,* which is less vigorous in growth but a very beautiful small crab and well worth growing, especially in small gardens.

Magnolias are always spectacular whether in large park plantings or in the home garden. There is more than the transient pleasure of the blossoms for these trees have that structural character so desired by the Japanese gardener and, while they may not bring us autumn leaf color, they do bring a year-round interest with their handsome branching pattern. Japan's magnolias are so beautiful that had they been her only gift to our gardens we would be eternally grateful. *M. Kobus* is so slow to flower that it is apt to be a disappointment, but once it has reached its maturity we find no faults in the creamy-white, four-inch blossoms it sends forth in profusion. Variety *borealis* is perhaps the best and the one we have at the head of the Glen flowers in April. *M. obovata* (syn. *hypoleuca*) grows so large in Japan that it is used as a timber tree and is greatly prized for its "light, soft, easily worked wood." We are more impressed with its large dusty-green leaves and its eight-inch, extremely fragrant, white flowers (with beautifully patterned centers formed by almost cerise stamens and yellow anthers) than we are with its woodworking qualities. Its bright-red fruit, too, is unusually attractive. *M. salicifolia* is not so large but is just as desirable. It is said to be perfectly hardy though it is difficult to believe that anything so elegant could also be tough enough to withstand even a breath of icy wind. *M. stellata* is also delicate in form and should be planted where the winds and rain will not damage its narrow-petalled blossoms. It comes from the woodland slopes of Fujiyama and is one of the most desirable species among the magnolias. The Magnolia section is situated about halfway along the Upper Road, on the west side.

Stewartia pseudo-camellia and *Stewartia monadelpha* both grow to 50 or more feet in Japan but here we know them as rather small trees or large shrubs. The latter has smaller flowers in July but redeems itself with rich red fall coloring. The color and pattern of the bark is attractive in both species.

Styrax japonica is a graceful small tree that grows in Japan's woodland areas. It has waxy, snow-white bells hanging along the underside of its branches in June. *Styrax Obassia,* with its very large and handsome, almost round leaves, has flowers that hang in terminal racemes and are followed by small egg-shaped fruits. Both of these hardy, deciduous trees are delightful and should be seen in flower, in fruit, and in the winter when their fine structural form can be enjoyed. *S. japonica* is planted about halfway down Azalea Way on the west side; *S. Obassia* is north of the parking area opposite the head of the Glen, near the Broadmoor fence, and also close to the Winter Garden.

Pterostyrax hispida is a close relative of the styrax. Ours were grown from seed sent to us by the Botanic Garden at Nikko in 1948. They are now about 15 feet tall and perfectly hardy. The showy panicles of fragrant white flowers are responsible for its common name, Epaulette Tree. It can be seen against the Broadmoor fence south of the Glen.

Cornus Kousa is almost as well known to us as is our native dogwood and gives us the same rewards in its white flowers, pinkish

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July in Southeastern Alaska

JEAN NIEMEIER*

JUNKETING through Southeastern Alaska has many surprises for Puget Sound gardeners. For instance, when we left Puget Sound on June 28, a few of our begonias had already bloomed. The tulips had ripened, the flowering crabapples had finished blooming and the dephiniums were at their peak. Oriental poppies and bearded iris were at an end.

Landscape gardeners with all skill could never achieve the splendid pictures which nature so carelessly displays in Alaska. With snowy peaks on every side, cascading rivers, translucent icebergs, tiny islets with the bonsai of giants to fascinate us, the planting of a garden seems almost a foolish gesture—yet wherever people go there always are some who must identify themselves with life processes by planting their own. In Puget Sound, this identification is easy and fruitful. In Alaska, it is not easy, but it may be spectacular.

In Ketchikan, July finds considerable sun, many heavy rains, sudden fierce winds. A city built partially on piling, partially on solid rock, partially on the side of a waterfall, Ketchikan displays few gardens to the tourist. Here and there small ones catch your eye. A single sad rhododendron in a home garden, four or five ponticums blooming scantily in a small park.

In one garden the center of attraction is a natural rock outcropping, bearing its own soft moss, with a neat lawn and a few small perennials. In another, a sheet of arabis, a patch of blue aquilegia, budding crimson peonies (in middle July, remember) reminds you that nature seems to allot more pigment to flowers here. There seems no lack of water with the high rainfall (over 100 inches) but the soil must usually be made, and it takes a determined gardener to haul seaweed and make compost on these steep hillsides.

In Wrangell, the fireweed was just coming into bloom—a sheet of brilliant pink. Salmonberries were just ripening and the red elderberries forming. No gardens were evident, but in a gift shop we saw the most brilliant blue delphinium we have ever seen, with pale golden Shirley poppies, in an arresting bouquet. Along a dilapidated board walk a *Dicentra spectabilis* was trying to bloom. Along another, a clump of orange oriental poppies.

Out in Icy Straits, at a quaint and interesting spot on Lemesurier Island, the Eibecks showed us the spot where John and Dolores Barrymore used to spend hideaway vacations with them. In a little house bulging with curios of great and little value, this elderly couple welcome every caller. Outside the house, in a carefully tended garden, Mr. Eibeck horrified us by snatching away great armfuls of delphinium—thinning them, he said. He apologized for their height—they were only about five feet tall, with stems the size of bananas, and many of them fasciated. His delphiniums were usually higher than the house, he said. They have not been transplanted at all and the "thinning" removes the outside growth which we always thought was the best part of the plant, but nevertheless, he grows delphiniums! As an afterthought, they advised us that a wheelbarrow of kelp went under each plant. As we examined the many small weeds in the garden, to his embarrassment and apology, we discovered they were millions of husky new delphinium seedlings, determined to carry on in spite of their ruthless reception.

A species of upright orange lily of *umbellatum* type grew here as well as everywhere else on our tour and was just coming into bloom. The luscious blue of *Meconopsis betonicifolia (Baileyi)* attracted our attention. The plants which we covet and admire at home were of no particular pride to them—just a blue flower. On the other hand, they cherished their foxglove plants and worried about each one. At home this is a weed for us, grows five or six

*We are grateful to Mrs. E. A. Niemeier, one of the Charter Members of Unit No. 11 "The Earthworms," for sending us this article about her summer travels.

feet tall and we only allow a few to bloom. His were not over 18 inches tall, and not yet in bloom.

The Eibecks showed us their "wild lilies" which appeared to be purple *Iris Kaempferi,* and complained heartily about *Rosa rugosa* which threatened to take over the garden. In our garden at home we have been trying to establish a hedge of *R. rugosa,* so it was difficult to sympathize properly.

One tree, about seven or eight feet in height, was a source of pride although he was disappointed in the fruit crop this year. It was a lone crabapple, "mulched" with gravel and hundreds of salvaged glass fishing floats of all colors—the kind you admire in gift shops!

Timber line is low here, with mountains coming right to the water's edge. Trees are narrow and tapering, mostly spruce, some hemlock. They grow close together and seem to huddle for mutual comfort. Many bear scars of their struggle for existence. It is not unusual to see roots of a huge tree upended among the tops of others, where a tree higher up has pitched to its downfall headfirst.

Inland, and at the ends of long inlets where the silt of streams or the dirt of glaciers accumulates a little, trees have a little better time of it—spruces are larger and our native alder can grow. We saw no other trees until far south on Vancouver Island when suddenly the naked copper branches of madrona reminded us of home.

In Juneau we saw not a single tree, but a few nice gardens with neat vegetable patches and the same upright lilies, delphiniums, meconopsis, and oriental poppies. A few pink hawthorns bloomed sparingly. The Arboretum has a good friend here—Maxcine Williams, the photographer, some of whose beautiful flower pictures appeared in a *National Geographic Magazine* article on Alaska earlier this year.

At Meyer's Chuck, on the Cleveland Peninsula, we anchored to escape some very bad weather. We disregarded the rain (and it seems so much wetter in Alaska!) to wander around in interesting woodland country, picked quantities of big, wild strawberries, and were astonished to see gorgeous red color in a very wet peatbog which turned out to be an especially brilliant red Indian paintbrush. We always thought this contrary plant grew in high, dry, barren, gravelly ground—certainly not in a wet peatbog. Everywhere here grew spruce, salmonberry, thimbleberry, a wild celery or wild parsnip, skunk cabbage (just blooming), deciduous blueberries. Turnip greens, lettuce, peas, beets and radishes in a small garden here were not yet ready for use.

Up in Glacier Bay, the U. S. Government is creating a new national park—Bartlett Cove. This is iceberg country and only after watching this endless fascinating spectacle to exhaustion does one step ashore and realize he is walking on ground orchids. Among sheets of brilliant blue lupine there were many vigorous clumps of ladies tresses *(Spiranthes Romanzoffiana)* with ivory-white spikes of tiny, hooded florets growing from clusters of lily-like leaves.

There is so much else to see here in Alaska that the plants have much in competition, but at Warm Springs Bay on Baranof Island even a gorgeous waterfall, cascading right down to our anchorage, did not blind us to the beauty of huge patches of Dodecatheon, solid banks of *Cornus canadensis,* lingonberries, kinnikinnik, and at least two kinds of low heathers, a pink and white bell-type flower with narrow needled foliage, *Phyllodoce* and *Cassiope*. This is a beautiful bay known to fishermen and some yachtsmen as a wonderful and convenient harbor which has warm mineral springs available for baths and laundry, a small summer population and a few brave souls all year 'round. Despite a huge winter snowfall (as much as 30 feet in one year) plants arise at this time of year as if from a greenhouse. In fact, one enterprising resident has fashioned a tiny hothouse of plastic, heats it with warm water from the hotsprings, and in July had a solid bed of flourishing cucumbers and tomatoes indoors.

Outdoors his chives, beets, cabbages, broccoli, oriental poppies, *rugosa* roses (and of

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The Arboretum Bulletin

VOL. XIX, NO. 3 SEATTLE, WASH. FALL, 1956

ARBORETUM FOUNDATION
OFFICE HOURS
9 a. m. to 4:30 p. m.
Monday through Friday
Phone MInor 4510

Special Notice

To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears will be dropped and THE BULLETIN will be discontinued.

Arboretum Membership Blank

☐ Active	$ 5.00
☐ Contributing	10.00
☐ Supporting	25.00
☐ Sustaining	50.00
☐ Sponsor	100.00
☐ Life	500.00
☐ Endowment	1,000.00
☐ Affiliated Garden Clubs and other organizations	10.00

The Arboretum Foundation,
University of Washington Arboretum
Seattle 5, Washington

I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

Name .....

Address .....

All memberships are non-assessable.

Notes and Comment

WE welcome the following new members of the Arboretum Foundation, who have joined since the publication of the Summer 1956 issue: Mrs. Robert Angle, Robert M. Bovee (Oswego, Ore.), Mrs. R. Morgan Boyd, Mrs. Parker Buck, Mrs. Donald F. Condon, Garrett Eddy, Mrs. Edsel S. Farris, Mrs. F. E. Frederickson, Mrs. Laurence Fry, Miss Rhoda M. Gard, Mrs. F. J. Gleeson, Mrs. A. J. Hedgcock, Mrs. Walter F. Hiltner, Mrs. Ethel C. Holman, Mrs. S. L. Hoover, Mrs. Edgar G. Johnson, Mrs. Otto Kloppenburg, Mrs. Charles E. Martin, W. H. McGuire, Mrs. W. H. McGuire, Marvin Mohl, Mrs. Robert Moore, Mrs. Robert Paige, Mrs. Jack Perine, Mrs. F. R. Steele, Mrs. Robert L. Stubbs, Mrs. Ralph H. Visser, Mrs. H. E. Von Kahrs, Mrs. Nathan Wilkinson, Jr.

Professor C. Frank Brockman, Associate Professor in the College of Forestry, University of Washington, is compiling a book on the native and introduced trees of the Puget Sound region. The area concerned extends north to British Columbia, south to approximately Chehalis, east to the Cascade range.

While most of the more commonly planted trees are included in this work, there may be some examples of unusual species which have not come to the author's notice, or exceptionally large or old specimens of introduced trees which should be recorded.

Details of particular trees thought to come within these categories should be sent to Professor Brockman at the above address in Seattle, and will be welcome.

In July the Arboretum library received copies of the Reef Point Gardens Bulletin, Vol. 1, Nos. 15 and 16 (June, 1956), which discuss native woodland plants of Maine formerly grown in this notable garden, situated at Bar Harbor on the Maine coast.

It is grievous to learn, however, from a notice in these publications, that on account of uncertain conditions in the future the house has been torn down, the gardens discontinued, and the library and other collections presented

to the Department of Landscape Architecture at the University of California at Berkeley.

The garden was opened, we believe, in 1939, and under the highly skilled direction of the owner, Mrs. Beatrix Farrand, consulting landscape gardener to the Arnold Arboretum, honorary trustee and landscape consultant to the Santa Barbara Botanic Garden, was performing a valuable community service in growing and evaluating a variety of plants suited to that, no doubt, somewhat exacting location. Illustrated bulletins were issued periodically since 1946, dealing amongst other subjects with the best roses, the various heathers, with climbing plants and foundation planting.

The loss of any garden where such work is being maintained is much to be regretted, but more especially when it occupies a unique geographical situation and has the advantage of the best direction and supervision.

* * *

The list of "Foyle's Handbooks" as mentioned by the Notebook Editor (page 92) includes: "Cacti and Succulents," "Chrysanthemums for Everyone," "Dahlia Growing," "Garden Roses," "Indoor Plant Growing," "Japanese and Miniature Gardens," "Orchid Growing," "Rock Gardening."

* * *

Officers of the Arboretum Foundation for the year 1956-1957 elected at the Annual Membership Meeting on October 4 in the Auditorium of the Women's University Club are:

Carl M. Ballard, President
Edward B. Dunn, Vice-President
Cebert Baillargeon, Vice-President
Dr. Walter A. Moore, Vice-President
Mrs. Hazel Pringle, Vice-President
Roscoe Drummond, Treasurer
Miss Anne McFee, Secretary.

Also elected as new members of the Board of Directors for a one-year term were:

Philip W. Bailey
Mrs. W. Kirby Holmes
Mrs. Henry Isaacson
Mrs. Mark Jensen
Dr. A. H. Meadowcroft
A. R. Munger
Herbert M. Hamblen, Spokane.

Olympic Sky Lines*

Unrivaled Olympics—vast, untamed, eternal;
Primeval peaks and glaciers
Sweeping the stars in their splendor;
Snowfield and forest—
Home of the elk herd, the bear, and the cougar;
Land of flower meadows, sword fern, and madrona.

Land of lost mountain lakes—
Incomparable Quinault and Crescent.
Long, fabulous reach of Hood Canal
Where the silver salmon run.
Inland sea of Puget Sound
With its inviting bays and beaches;
Its buried clams and goeducks.

Rain-blessed, snow-clad Olympics—
Source of roaring, rumbling rivers
Tumbling toward the sea,
Bearing names from Indian legend—
Queets and Hoh, and Bogachiel;
Wynoochee, Quillayute, and Elwha.

Last camp of Paul Bunyan—Superman of the forest;
Camp of real woodsmen, high-climbers and loggers,
Grizzled and lean like the cougar;
Domain of the forester, ranger, and lookout,
Wild region rich in resources.
Raw, savage Olympics—vast, untamed, eternal;
Where frontiers fade and trails grow dim
In the ever-waiting wilderness.

ELMER W. SHAW

* * *

"Gardening, above all crafts, is a matter of faith, grounded, however (if on nothing better), on experience that somehow or other seasons go in their right course, and bring their right results."—CANON ELLACOMBE.

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*We are indebted to the Editor of "The Living Wilderness" for permission to reprint this poem—also, of course, to its author, Mr. Shaw, who by profession is a Research Forester with the U. S. Forest Service.

ARBORETUM NOTEBOOK

This section is particularly designed for notes, information and queries concerning beautiful or unusual plants from growers of all types or experience. We solicit your remarks and ideas, but space limitations may sometimes restrict us to publishing those of the widest interest.

GARDEN HINTS . . .

OCTOBER

One of the most striking trees in October is the Chinese "Tree of Heaven" *(Ailanthus altissima)*. It never fails to attract attention by its huge compound, almost palm-like leaves, its bunches of berries and its fresh-green appearance. I've heard it likes best to live in unkempt back yards full of trash but that may be only gossip. Certainly it needs no care. The male tree has a disagreeable odor.

Arctotis is a beautiful plant that blooms on into October. Most of the genus are perennial but some should be treated as half-hardy annuals. The hybrids of *A. speciosa* have a wide range of color, orange and crimson, yellow and maroon, a daisy-like flower on long stiff stems. *A. grandis* is often seen. It has pleasing, silvery foliage with blue and white flowers. *A. stoechadifolia* is considered one of the best; it is deep red with a black center.

Too seldom do we see blue salvias in our perennial borders. I recommend them to you.

When planting seeds of perennials this fall try those of anchusa. The blue shades are exquisite but sometimes those plants that bloomed luxuriantly I found failed to have strength to live through the winter. There are many varieties; Morning Star is dark blue; Dropmore is most often seen but Pride of Dover and Opal are equally good. Seed may also be sown in spring.

In a hot, dry place, nothing is more captivating than a bed of portulacas. They are every conceivable color, some shades most unusual and curious. Try a packet of mixed seeds next spring or buy a flat of mixed varieties and love them from late spring to late fall. Our grandmothers used them for edgings and ground covers.

NOVEMBER

We often think of November as a barren month but before the *Cyclamen neapolitanum* are gone *C. coum* appears and then *C. ibericum*. These charming ground covers have a garden value not always appreciated. *Aster Frikartii* or Stafa is still blooming, defying the inclement weather along with *Schizostylis,* especially Mrs. Hegarty with her unusual, out-of-season satin-pink, a combination hard to excel in any season.

If you are planting lily bulbs this year it is necessary to know the likes and dislikes of different varieties. There is a new series of handbooks called "Foyle's Handbooks," published in the U. S. A. by Dover Publications, Inc., 920 Broadway, New York 10, N. Y. "Lilies and Their Cultivation," by M. E. Leebrun, is only one in the series but it will be a great help to all lily growers, experienced gardeners as well as beginners. The little book only costs 65c. For a list of these books sent to the Arboretum see page 91.

To be slightly heretical I would like to plant pink polyanthus roses in an herbaceous border near anchusa or blue salvias. I like tall species roses as a background for shrub borders. I should like to combine polyanthus roses in the shrub border using early flowering shrubs about the height of the roses and a proportion of taller shrubs scattered toward the back. This would keep color in the border from early spring to November and avoid the sparse appearance of some rose beds.

There is a rule-of-thumb for November pruning that usually is a help to an amateur gardener. Those shrubs that have bloomed in late summer and autumn and those grown for their ornamental value need attention now. *Buddleia Davidii* and later flowering spiraeas should be cut back severely to about four buds. This will insure strong growths in spring. There is a general rule, of course, that pruning should always be carried out as soon as possible after blossoming in all seasons.

There seems to be two schools of thought about the time for planting rose bushes. They

say at the Arboretum that November is an excellent month to plant rose bushes but spring is also excellent. That may settle any question you may have had about seasonal planting.

DECEMBER

Erica carnea recovered nicely from the last November frost. The flowers of *E. carnea* are generally frost proof, the only winter-spring blooming heather that can be relied upon. *E. darleyensis* is a hybrid of *E. carnea,* a little taller, and generally blooms along with the latter until March.

The late Mr. F. C. Puddle, an eminent English gardener, said: "A good plantsman can be easily recognized by the use which he makes of the odd places in his garden, for it is here that he usually finds congenial homes for plants which he would otherwise be unable to grow in the open."

Last summer I visited a garden where all the flower beds were edged with broad ribbons of Sweet Alyssum. The faint fragrance was enticing and the soft greenish-white borders were in perfect tune. I would like to try mignonette in the same way, or perhaps, dwarf lavender.

Many growers of *Pleroma macrantha* will be glad to know that the correct name today is *Tibouchina semidecandra.* It is the lovely, house or greenhouse gray-leaved plant with inch-wide Tyrian purple flowers. It is easy to grow and easy to propagate. Mrs. Alexander Hepler has big specimens of it. This summer she placed the pot in which one grew close to an outside wall where it was espalied against the house. The effect was charming.

* * *

The Lilian McEwan Unit No. 26 of Bainbridge Island points with pride to the new Rhododendron "Mrs. A. F. McEwan," honoring Mrs. Alexander Fraser McEwan, for whom their unit is named. This new Rhododendron, of the *Loderi* variety, is noted for its large, lovely pale-pink blossoms. It was propagated at the Arboretum from seeds given to the Arboretum by Herbert Ihrig.

A labor-saving tool during transplanting days is a scoop-type sawdust shovel which can be used as a sled to move heavy, bulky clumps of perennials, shrubs, sacks of fertilizer, etc., from one place to another in the garden. The advantage of the shovel is that you don't have to pick the object up to move it. By tilting the handle and easing the object onto the blade of the shovel, one person can easily pull the load to the desired location, thus making this kind of moving job a one-man operation.

An effective method of killing pesky Morning Glory vines without harming the surrounding plants in the garden is to dip the loose ends into a weed killer solution.

To control smaller weed pests in hard-to-get-at spots in rock gardens, apply weed killer solution with a small paint brush.

JULIA REYNOLDS, *Chairman*
Lilian McEwan Unit No. 26

* * *

July in Southeastern Alaska

(Continued from Page 89)

course the meconopsis) were in great array. The daffodils had just ceased blooming. It is amazing how rapidly plants will grow in the short season. Some ambitious person could certainly develop the use of hotsprings for heating a seasonal vegetable greenhouse to provide fresh vegetables for the summer-time market of the fishing fleet which has to be supplied from the states now.

On a woodland trail constructed by the government, we walked on raised boardwalks six to eight feet off the ground through hemlock, spruce, serviceberry and several kinds of deciduous blueberries. Everywhere you see the most inspiring gnarled spruce trees—twisting and throwing themselves about in the anguish of their fight for survival against trials of winter winds and ice—every one a character specimen you would covet for your rock garden or at your doorway.

Great clumps of pale yellow Indian paintbrush *(Castilleja pallida)* grow in the peaty soil here, with deer fern, one similar to our woodfern, one with the wiry stem of the maidenhair, and quantities of our own native saxifrage. Beyond the boardwalk we hopped

from hummock to hummock of wet peat soil, stepping carefully to avoid damaging the hundreds of shooting stars which grew among wild lilies-of-the-valley and a type of wild purple violet not known to us—a single tiny bloom on a two- or three-inch stem arising from a small rosette of pale green leaves and what appeared to be a scaled bulb the size of a wheat grain.

The profusion of plants we have so long admired and their willful flouting of all the "rules" discourages us in our hopes of ever achieving a planting which could possibly compare with what grows so deliberately by itself. Perhaps that is why we saw so few plantings in southeastern Alaska. There is so little dirt here—only muskeg, or peatbog, and rock—not just rocks—but ROCK. There are so many little islands with a few graceful trees growing out of a cupful of soil in a crevice of a mammoth solid rock. The plants grow and flourish wherever they are happy and the wind and ice seem only to strengthen their determination. Alaska has always been known as the haven of the independent man, the "lone-wolf" and the "character." I think we will have to concede that plants and people both seem to have a lot of character here!

* * *

The Bailey Hortorium, Its Past and Present

(Continued from Page 67)

tools" of the staff, they also enable us to provide individual services to plantsmen. The extent to which these services are available is limited only by the size of our staff. Such services include those listed below.

Identification of common and rare plants, and provision of the correct names of plants.

Sources, in many countries, where a particular plant, or its seed, may be bought. The hortorium's master card index of its catalogues provides the most complete record anywhere of who has what, and when.

Information as to the source of the first description given a plant, of the name of the man who described or discovered it, or of the person in whose memory it may have been named.

Information on what books and what magazines, from all parts of the world, are to be had about particular plants or special groups of plants. The only bibliography of horticultural periodicals of the world was published by the Hortorium in 1955. Other bibliographies are planned for the future.

Information on the ways by which related kinds of plants may be distinguished, one from another.

For the future, there is proposed an editing service for seedsmen and nurserymen who might wish to ensure correct usage of names in their catalogues and literature.

Liberty Hyde Bailey, had he lived, would have been ninety-eight years old on March 15th. Recognizing the manifold contributions he made to horticulture, culminating in his establishing and giving to Cornell this Hortorium bearing his name, the University Trustees have authorized the establishment of a Liberty Hyde Bailey Memorial, to be a fund of $500,000. This fund is to provide an endowment for the Bailey Hortorium, the income to be used to increase the personnel and thus increase its services to horticulture. Announcement of the project was made on this ninety-eighth anniversary of the birth of Dr. Bailey. The fund is to be raised by contributions, primarily from three sources: former students and friends of Dr. Bailey; the memberships of American horticultural organizations, and friends of the Bailey Hortorium. Voluntary contributions may be sent to the Bailey Hortorium, payable to Cornell University. From time to time, readers of "Baileya" will be advised of progress in development of the Memorial, because on its success surely depends the future of this institution.

BOOK REVIEWS

Supplement to The Royal Horticultural Society Dictionary of Gardening, edited by Patrick M. Synge, M.A., F.L.S., Oxford University Press (1956). $10.00.

THE four volumes of the Royal Horticultural Society Dictionary of Gardening seemed a "must" for all serious gardeners but now comes a Supplement, equally important. It is devoted to corrections in the main work and it answers all the questions missed in the former edition. This supplement is a valuable accessory and it is proposed to issue supplementary volumes approximately every five years, thus keeping the Dictionary up to date. This volume is ably edited by Mr. Patrick M. Synge, writer of many books on gardening and currently Editor of the *Journal of the Royal Horticultural Society.*

The first part of the Supplement contains lists of all recommended flowers, fruits and vegetables. For example, under Rhododendron long lists of named hybrids are given indicating parentage as well as hardiness. There is also a short color description of each. Being a British publication there is not a complete list of American crosses. In this section there are scholarly articles on vegetables and fruits, including the Fertility Rules in Fruit Planting.

The second half of the volume is devoted to "Additions and Corrections." These are arranged in alphabetical order and the list contains special articles written by noteworthy growers and investigators in the horticultural world. Botanical gardens and arboreta are listed and there is a short article about the University of Washington Arboretum in which it says "this is ideally situated in one of the best growing areas of North America, where soil and climate frequently combine to provide for vigorous growth." There is a section containing Botanical Keys.

Then, to name a few suggestive topics. There are authoritative, generally long paragraphs on Fertilizers, Frost Injury, House Plants, Life Span of Seeds, Pronunciations of Botanical Names, Pruning, Plant Nutrition, Soils, Shapes of Leaves, Bulbs, Pests and Recommended Controls. In short, every conceivable subject pertaining to gardening is discussed.

There is a section listing the changes in plant names. The change in some names is often startling. The giant Sequoia is now *Sequoiadendron giganteum* and, wonder of wonders, our own Douglas Fir (once *Abies Douglasii*) is not Douglas Fir at all but *Pseudotsuga Menziesii.*

The main work and these Supplements, present and future, will provide a priceless source of information which has long been desired by the professional horticulturist as well as the amateur gardener.

G. T. D.

1955 American Camellia Yearbook, edited for the American Camellia Society by Arthur C. Brown, Gainesville, Fla.

NOT only has each succeeding volume of the American Camellia Society's annuals shown an increase in volume size since the first one published in 1946, but over the years the scope of their coverage has widened until this, the current issue, includes information gathered from all parts of the camellia world—Australia, New Zealand, China, India, Portugal, England, and all the camellia-growing sections of the United States.

A compilation of factual articles based on the experiences of members devoted to growing and furthering knowledge about camellias, edited by a staff dedicated to the dissemination of such information, the 1955 American Camellia Yearbook has something to offer both the casual grower with one or two camellias and the camelliaphile who is completely absorbed in his hobby.

Of special interest is the section devoted to "Relatives, Species, Varieties," with its review of past developments and predictions of what can be expected in the near or distant future—yellow and purple flowers out of the hinterlands of China, more hybrids from the hybridizers of England, seedlings and mutations from the Pacific Coast and the Deep South of the United States.

Answers to troublesome questions about disease and pests, general culture, even the relative hardiness of various varieties may be found in other articles, as well as excellent photographs of flower arrangements, descriptions of plantings and gardens and a review of the literature published about camellias.

Membership in the American Camellia Society includes the bound Yearbook and the four quarterlies at the price of $5.00 for annual members, $10.00 for sustaining members.

HELEN G. BUZARD

Ground Cover Plants by Donald Wyman. Macmillan, 1956, price $4.75.

GARDENS have utilized ground covers more extensively than ever in recent years. It seems fitting then that such a well informed and experienced horticulturist as Dr. Donald Wyman of the Arnold Arboretum should write a book about them. This diversified subject requires a background of training and natural judgment such as Dr. Wyman possesses. He writes authoritatively but with great attention to detail. His enthusiasm for the various plants is tempered with scholarly caution which prevents him from making sweeping claims which might mislead the unwary.

Step by step he leads us through chapters of general information on hardiness, planting, winter protection, pruning, propagation and "Lists of Ground Covers for Special Purposes" to a final alphabetical list of these same plants. Dr. Wyman's consideration for particulars leaves no doubt that he is familiar with the gross ignorance of novice gardeners. He cautions them away from numerous pitfalls. Yet his presentation of the material is excellent reading. Somehow he avoids sounding repetitious even though the same or similar plants may be presented in several categories. Methods of handling ground covers demand repetition for emphasis but this feat receives such skillful handling that our attention is held.

The special purpose lists supply ready reference information from the standpoint of various soil conditions and exposures as well as from the esthetic and utilitarian angles.

A hardiness zone map spreads across the inside of the cover and the adjoining page. The same map is repeated at the back of the book for convenience. Zone numbers referring to this map appear in the detailed alphabetical list.

This same list outlines pertinent facts concerning size, flower, fruit, foliage, habitat, method of propagation and common name or names of each plant included therein. This outline information is followed by a brief paragraph or two discussing adaptability and usefulness of the particular ground cover mentioned.

Line drawings illustrate the chapter on propagation. Forty-one black and white illustrations of fine quality provide the reader with closer acquaintanceship with individual plants or with associations and uses of them. One of these pictures shows the demonstration plots at the Arnold Arboretum where 150 different kinds of ground covers are being tested.

Few gardens fail to make use of ground covers. City lot gardens and extensive estates as well as roadside plantings and parks require the right cover for the right place. The amateur gardener and the horticulturist alike will welcome help from Dr. Wyman's concise treatment of the broad subject of "Ground Cover Plants." He has assembled a multitude of facts and ideas in an orderly array, for the great benefit of all of us ground cover addicts who will refer again and again to this newest book of a noted horticulturist and writer.

FRANCES KINNE ROBERSON

A Review of the Nearctic Viburnum by W. F. McAtee, published privately, Chapel Hill, North Carolina, 1956.

THIS review of the North American *Viburnum* species is the work of a zoologist rather than of a botanist, and one notices an occasional term more commonly used in zoological papers than botanical. Regardless of the slightly different terminology this little book will prove most useful to anyone interested in the native species of *Viburnum*, for the descriptions of the species and their forms are very complete. and there are three sets of keys. The first key is based on foliage and flower characters; the second based on the winter buds; and the third on the characters of the stones. The latter two are for general affinities only, however.

In all some twenty-two species with 14 varieties are covered, including several of the naturalized exotics.

While Dr. McAtee wrote primarily for professionals, there are bits of information scattered throughout that make interesting and often amusing reading for the advanced amateur. For instance, he remarks on the uses of the various species, if any, and also notes the fall color of many. This is a welcome addition to the Arboretum's library.

J. A. WITT

Ferns for Our Gardens

(Continued from Page 73)

laris, begin to be miffy. All may be found at sea-level and well up into the mountains. *Pellaea Bridgesii, Pellaea Breweriana,* and *Pellaea brachyptera* are much more difficult. In my garden they missed the warmth of their home habitat; probably the soil was not right, and above all they missed a right-slanting boulder under which they could tuck their roots for the seeping moisture. Oh! they have been tamed; Mrs. Conner Gray can grow them; also Dr. Leo Hitchcock.

When we "flew" figuratively through Florida I wished I had been able to study about the Florida ferns beforehand. There are so many, such odd ones and of such odd habitats, as for instance the shoestring fern, *Vittaria lineata,* which often is seen on the cabbage palmetto; many beautiful ferns grow seemingly on no soil at all. And it is in Florida that we see the largest fern of the United States, the golden Acrostichum, *Acrostichum aureum;* (I am pretty sure this name is obsolete). I did not see any that were eleven feet high as has been reported, but I did see some that were six. It is absolutely gorgeous, very dark green and with a definite upward thrust, and always standing in brackish water—it will not be found elsewhere. When we saw it in November, the pinnae, a few inches to a foot long and half an inch to three inches wide, were covered on the back with a thick, continuous pelt of naked sporangia. The eyes of one on the lookout for ferns will immediately be caught by this astonishing and unlikely piece of vegetation.

There are many small and appealing ferns in the Southwest. After experimenting with them for a season I was able to admire them still but to keep my hands from disturbing them. They do not like the overhead wetness nor our sunless skies. In Mexico is seen the greatest variety of ferns—from those of tree size to some that creep closely appressed to its substratum; banks covered with the vineing Lygodium, and ferns dichotomously branched like a maidenhair but rough in texture like a brake.

The British Isles is where the greatest concentration of hart's tongue, *Scolopendrium vulgare,* is found. In its simplest form the frond is dark green and very leathery, close to two inches wide and twelve to fourteen inches long (fig. 8). This fern is very susceptible to shading; it does not want neighbors to crowd or branches to overhang. It has the most remarkable number of forms and varieties—they are narrower or wider, longer or shorter, ruffled and fluted in greater or less degree; also crested at the apex or on the margins. These varieties have been collected, named and propagated by the British so that it is now possible to acquire a whole collection of them.

For some reason the British locale seems to induce cresting, fluting or proliferation on ferns. And the British collectors have cared for them, propagating them and naming them. Polypodiums, polystichums, athyriums, dryopteris and even osmundas show these crested forms. They are interesting and handsome; I am glad I have them but I really like the species best.

One little foreigner in my garden has a certain glamour. Its leaves are purple and the veins a greenish silver. Its position against the purple bark of a cedar enhances it also. This is the Japanese *Dryopteris Goeringianum pictum*. It amuses me that my start was brought by air in an overnight bag!

I have not mentioned the brake, *Pteridium aquilinum*. It is the most cosmopolitan of all ferns. If it were not so common and invasive we should all want it. More than for its green, quick-shooting fronds in spring I am grateful for its cinnamon-brown veil that is cast in waste places in the fall.

In these lines I have stressed the easy-to-come-by ferns and those that are easily managed in cultivation. Ferns alone present a finished and restrained planting. They may be enlivened by the introduction of other small woodlanders. A fault that should be avoided like a pest is the spotted effect. Clumps should be striven for rather than spatterings. A dozen trilliums; the fine foliage of Vancouveria or the smaller epimediums work well into the picture; Coptis, lady's-slippers, violets, shortias and a great many other things! Foliage must harmonize and withering flowers should be removed promptly.

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Now What Shall We Do?

(Continued from Page 82)

bloom. What would spring be like without our *Rhododendron ciliatum* and *cilpinense?* Could we forget the Azors and Fabias and be content and happy? I am sure we couldn't. How drab our summers and fall, where no pernettyas or cotoneasters brighten the way. We must plan places for them. They blend happily with other shrubs when their requirements are met, which of course takes thought and planning.

If our winters continue to be severe, then we should strive harder to create design that cannot be broken down by the loss of key or accent plants.

It is time we learned the requirements of our plant materials, to use them where they belong and not scatter them willy-nilly regardless of whether they prefer to grow in the shade or are sun-loving. It is impossible for a shade-loving plant to express itself when it stands unprotected in the hot sun, while sun-loving plants weaken and die when grown in the shade.

Most shrubs that are zoned for No. VII will survive a vigorous winter if they are planted and cared for according to the specific requirement of each.

Now that we are starting over in redesigning our gardens, it is well to remember that each shrub should have a specific duty to perform in a design, whether it is used as an individual plant or as one of a group. When a grouping is planted too closely we do not get the true character of the shrubs. When the shrubs are crowded they are weak and are unable to withstand cold or drought.

In conclusion, I suggest that we look up, give thanks and rejoice that so many things we thought were gone have come back. Our gardens will be better because we are building more wisely.

Japanese Trees in Our Arboretum

(Continued from Page 87)

fruits, and fine fall color. It is smaller in size, in leaf, and in white bract, but most acceptable where we want a small flowering tree. There are several tucked under taller trees just at the head of the Glen by the Upper Road, and a number in Rhododendron Glen and in Woodland Garden.

One of the most interesting trees in foliage is the Katsura Tree *(Cercidiphyllum japonicum)*. There is a tinge of red on the margins of its circular leaves when they unfold in the spring, and they turn almost lemon yellow after the first frosts. Some writers speak of its flaming red leaves in autumn, but it is generally accepted that those are the Chinese form. In most of Japan it is seen as a small, graceful tree or shrub with several trunks, but on the northern island of Yezo it attains perfection and grows to a height of 100 feet with the multiple trunks growing together to form massive boles. In this form it is a valuable timber tree and is used for low-cost housing and for boxes and packing cases. Several Katsuras are on the ridge between Loderi Valley and Woodland Garden, and may be seen from the road.

Maples are used for color in Japanese gardens just as they are here, though the number of species and forms known to the Nipponese far exceeds those with which we are familiar. *Acer palmatum* in more than seventy forms is found in our Arboretum, giving us a range of color from almost purple to pale chartreuse, and from leaves so round that the lobes are necessarily shallow to those deeply cut and with each lobe narrowly shredded and fringed.

A. rufinerve is planted across the trail from the Winter Garden, and not far away is *A. capillipes,* whose leaves are red when new, green in maturity, and return to red before they drop. Both of these maples usually have 3-lobed leaves but occasionally *rufinerve* develops a couple of very small basal lobes. This is one of the maples whose beautiful bark adds interest to the winter scene. *A. cissifolium* and *A. nikoense* are allied with that small group of maples that have 3-segmented, compound leaves. The Arboretum Bulletin for Winter 1954 has excellent drawings of these unusual leaves that show the differences between them. *A. nikoense* plants have been moved from the old maple collection to the nursery awaiting permanent planting. This species is especially noted for its fall coloring. *A. diabolicum* receives its name from the stinging bristles on its nutlets, and the two tiny horns which adorn them. This maple is, perhaps, remarkable for its name rather than its beauty. *A. ginnala* is growing on the west side of the Boulevard, just north of the Cottage. The fruit of this extremely hardy species is, according to Dr. Rehder, "usually red and conspicuous during the summer," and W. J. Bean lauds it as "one of the best for autumnal color." *A. Buergerianum* is not very well known to our gardens but is promising and attractive. There are several on the Upper Road just north of the Rock Garden and others still in the Nursery.

A good many of our maples were imported from a Japanese nursery in 1940, and others have been grown from seeds and cuttings from Japanese Botanical Gardens. The more than 15 species and the countless varieties and forms now growing in the University of Washington Arboretum constitute what is probably one of the finest collections of Japanese maples in the country.

Three outstanding tree hollies in the Arboretum are from Japan and they have proven to be extremely hardy. They will vary in size from 30 to 60 feet in maturity though our specimens are still far from that height. All three of them have leaves without spines and the margins of the leaves of *I. integra* and *I. pedunculosa* are untoothed. *I. latifolia* has 4 8-inch leaves that are shallowly toothed and rather yellow on the under-surface. Each of them has red fruits but those of *I. pedunculosa* are conspicuous because of their long stems, and those of *I. integra* are much the largest. All of these may be found in the Holly Collection south of Rhododendron Glen, beside the Upper Road.

Kalopanax pictus (syn. *Acanthopanax ricinifolius)* is a member of the Ginseng family and closely allied to ivy and fatsia. It is a deciduous tree which may grow to more than 80 feet and has a spiny trunk sometimes as much as 4 feet in diameter. Its palmate leaves may measure 14 inches in width and almost as much in length. The small flowers are white and the fruit is blue-black. In spite of its almost tropical appearance this species is amazingly hardy. Mr. Matsumura, of Nikko Botanical Garden, includes it in a list of yellow-tinted fall foliage plants. It is planted between Azalea Way and the Boulevard, near Boyer Avenue.

Trochodendron aralioides is an evergreen tree that grows in the mountain forests of Yezo and on the main island of Honshu. It is one of two genera in a family which was once considered a part of the Magnolia family but is now given individual status. Its handsome foliage and bright green flowers make it unusual and desirable.

Dr. Ernest H. Wilson, plant hunter in the Orient, once said, "Trees do not make a garden but a garden without trees scarcely deserves the name." Certainly there are few more beautiful or more worthy of our regard than these emigrants from the Islands of Japan, and it is here in our Arboretum that we can see them taking root in Western soil and then bid them welcome to our own gardens.

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Fall Coloration of Nikko National Park, Winter 1949.

Map of the Arboretum (shows location of areas mentioned), Summer 1952.

Cherry Issue, Spring 1953.

Crab Apples, Winter 1953.

Maples, Winter 1954.

Winter Hardiness of Flowering Cherries, Summer 1956.

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Some of My Experiences in Raising Large Flowering Clematis from Seed

(Continued from Page 77)

11-23-52. The progress of these seedlings was rapid and satisfactory. One of them, from a group of Prinz Hendrik seedlings, had several blooms in the spring of 1953. Several others from the same group bloomed soon after and all resembled the parent, but were not exact duplicates. After the second winter in the greenhouse I planted the mass of Prinz Hendrik seedlings in the ground to develop naturally. This was in the spring of 1955. Although these plants grew well during the summer and fall, the severe freeze beginning on Armistice Day, together with other cold spells, killed them to the ground level. After a slow start in the spring of 1956 these plants grew rapidly, are now over six feet tall and have a number of lovely blooms.

In the fall of 1954 I collected seeds from thirteen varieties of clematis and kept them in paper bags outdoors until I could take time to plant them on January 15, 1955. I planted them in separate labelled pots and put the pots outside on a board close to the south side of my house. They were left there until April third when they were put into the greenhouse. They were carefully watered during the period outdoors as well as in the greenhouse. There was no evidence of germination until August 20, 1955, when one seedling of Jackmanii Superba appeared. Following that there was good germination in all of the pots except three which showed none. The growth of most of these seedlings was satisfactory. The contents of all of the pots containing seedlings were planted outdoors on April 29, 1956, keeping the contents of each pot intact and disturbing the roots as little as possible. Each group was planted in a separate prepared location. At this time there are several rather pretty blooms.

On November 9, 1954, I sank several pots of seedlings along a line in a rose bed and

covered them a little with soil to protect the pots and contents from damage from freezing weather. These were removed from the pots on February 5, 1955, and planted in the same hole without disturbing the roots more than could be helped. The roots get intertwined and almost fill the pot after a time and it seems almost impossible to separate the individual plants. These seedlings grew well during the summer and had a variety of large and interesting blooms. I put numbers on twenty-three of them, hoping to keep track of them so that I could layer the vines later. My plan was to train each vine on a separate string so that it could be identified for layering. The early and severe winter weather killed all of the growth above the ground and most of the labels were lost, but one plant survived and bloomed very early. All of those groups that had been frozen started in growth early and have made very vigorous growth. There have been a number of very fine blooms up to this time and others are developing. Some "have wide, ample blooms, beautiful petal placement and fine color." The survival of so many plants after the unusually severe winter weather speaks well for the hardiness of the clematis in this region.

COMMENT

I presume that none of the parents of the present large flowered hybrids have been pure-bred so that they could produce identical varieties if self-pollinated. There is, therefore, a reservoir of hidden characteristics that may appear if self-pollinated or used in hybridization. Some characters may be good and some bad, but nevertheless hereditary. Unless protected from cross-pollination by wind, bees and other insects it is not possible to conclude that any given seedling has come from the genes of the seed parent alone. I have watched honey bees busily going from one clematis variety to another, thus making it possible for natural cross-fertilization to take place if conditions are right. Each plant from seed must have two parents, each of which is a mine of hereditary characteristics brought down through the ages.

CONCLUSIONS

I. Many lovely large flowering clematis can be raised from seeds of good varieties growing in your own garden.

II. Seeds of large flowering clematis, when picked and planted soon after they are ripe in the fall, can not be expected to show evidence of germination until early next fall under ordinary care.

III. Being seeds of hybrids it is not expected that they will come true.

IV. What have I accomplished? I have many groups of seedlings growing and up to this time have seen fit to put an identifying number on thirty-four of them because I consider them well worth keeping and worth the effort it has been to produce them.

THE ARBORETUM BULLETIN
Published by the
Arboretum Foundation
University of Washington
Arboretum
Seattle 5, Washington

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